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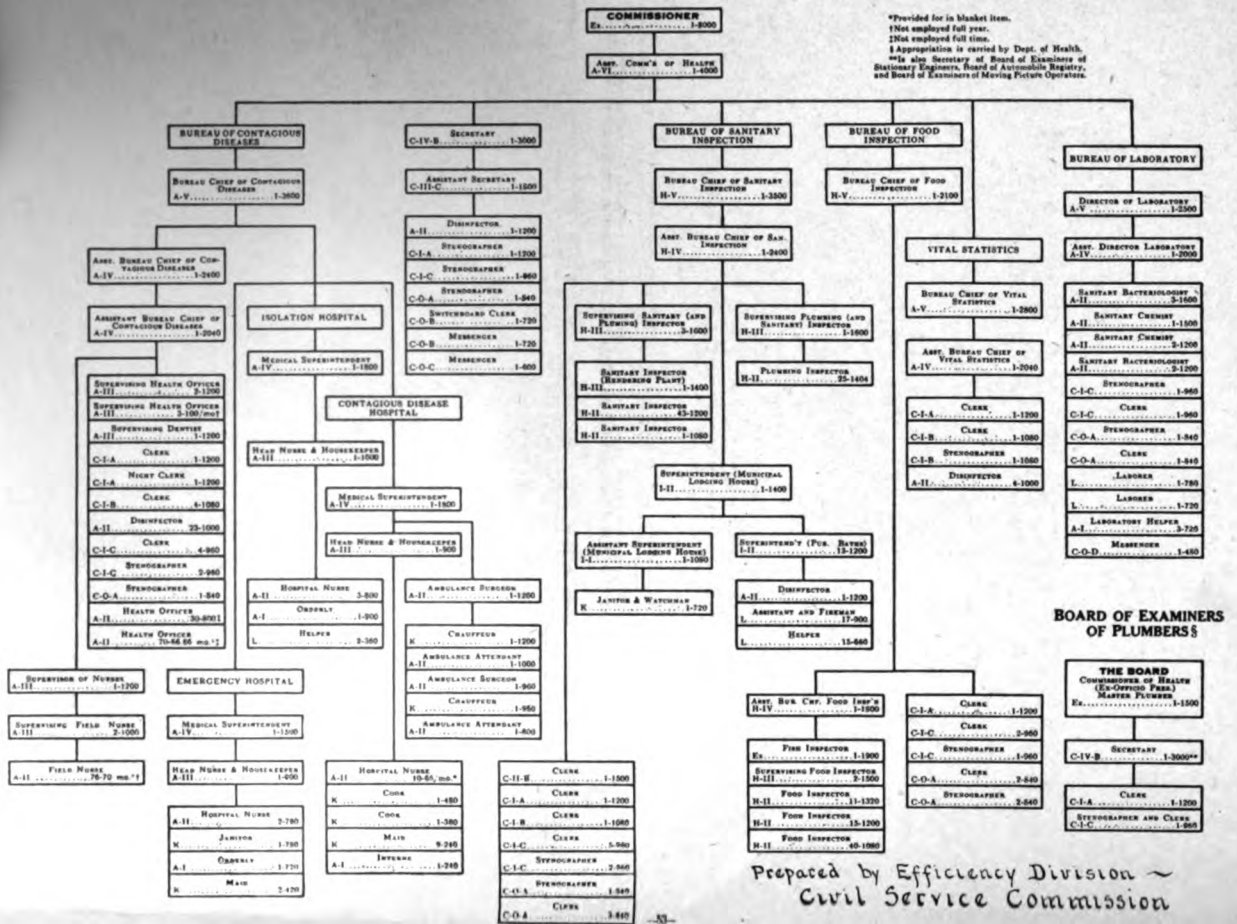
DEPARTMENT OF HEALTH



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REPORT

OF THE

DEPARTMENT OF HEALTH

OF THE

CITY OF CHICAGO

FOR THE

YEARS 1907, 1908, 1909, 1910

W. A. EVANS, M. S., M. D., LL. D.
COMMISSIONER OF HEALTH

CHICAGO
1911

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CHICAGO, MARCH 1, 1911.

To His Honor, the Mayor, and the Honorable, the City Council of Chicago,

GENTLEMEN:

Herewith I beg to submit a summary report of the activities of the Department of Health for the years 1907, 1908, 1909 and 1910, with explanatory statements covering methods in vogue in the administration of the Department's affairs.

Accompanying the report are articles on various phases of health work, giving results accomplished by policies already established and suggesting methods of handling related matters.

It is hoped that the citizens of Chicago may, through the medium of this report, obtain a larger view of the importance of public health work and so lend their still more active co-operation to matters pertaining to it.

The Department wishes to thank most cordially all who have made it possible to bring its activities to the degree of efficiency attained—the Mayor, the City Council, the press and the public.

Respectfully submitted,

W. A. EVANS, M. D.,
Commissioner of Health.

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In Memoriam

Frank W. Reilly, M. D.

Assistant Commissioner of Health

Died December 16th, 1909

It is with deepest sorrow that we chronicle the death of Dr. Frank W. Reilly, the Assistant Commissioner of Health of Chicago from 1895 to the time of his death, December 16, 1909. His passing was a source of bereavement to the entire community of which he was so useful a member. The bereavement was peculiarly personal to the thousands of our citizens who are living today chiefly because of Dr. Reilly's wise sanitary foresight and his capabilities as an administrative officer in the sanitary field.

As Union soldier, pioneer sanitarian, editor and public official, his life has been devoted to his fellowmen. Brief reference to some of the important events of his life serves to emphasize the many-sided character of the man and his great practical usefulness.

1836—Born at Bolton, England. Removed to United States in childhood. Educated in public and high schools of Philadelphia.

1861—Received degree of M.D. from Chicago Medical College and appointed member of faculty. When Civil War broke out enlisted as volunteer surgeon.

1862—Seriously wounded at Battle of Shiloh. Returned to front as soon as recovered. Promoted to be surgeon of 26th Illinois Infantry with rank of major. Had charge of general and field hospitals, serving under Generals Grant and Logan. He was with General Sherman in the march "to the sea."

1867—Appointed Sanitary Inspector, Chicago Department of Health.

1873—Entered the United States Marine Hospital Service.

1876—Appointed Surgeon-in-Charge of the river port at Cincinnati, Ohio, when serious epidemics were sweeping the South.

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1878—Dispatched to Memphis and Vicksburg when yellow fever broke out there. For distinguished service was made sanitary inspector of National Board of Health and placed in charge of sanitary regeneration of Memphis, working with the late Col. George E. Waring.

1879—In charge of sanitary inspection of Mississippi Valley.

1881—Became member of Illinois State Board of Health.

1885—Editorial writer and later managing editor of the Morning News, Chicago. Under Dr. Reilly's editorship the Morning News became leader in the campaign for a purer water supply for Chicago, Dr. Reilly having previously taken an important part in the practical working out of plans for the sanitary drainage channel—Chicago's greatest sanitary undertaking.

1891—Appointed member and Secretary of Illinois State Board of Health.

1894—Entered the service of Chicago Health Department.

1895—Appointed Assistant Commissioner of Health—continuing in that position with great credit to himself, to the Department and to the city and with incalculable benefit to his fellow citizens, up to the time of his death.

Dr. Reilly's earliest connection with the Department of Health of Chicago—1894—marks the beginning of efficient administration of sanitary affairs in this city. His thorough knowledge of medicine—especially preventive medicine—his keen sense of its application, his force and enthusiasm and his evidently unselfish devotion to the service were an inspiration and stimulus to his co-workers. His work, never spectacular, always forceful and effective, has contributed most to the reputation and high standing that the Chicago Department of Health now enjoys in the sanitary world.

Dr. Reilly was the first to conceive the idea of publishing a weekly health bulletin which should contain a review of the city's health and drive home a simple lesson in the prevention of unnecessary sickness and death. As an educative factor, this Bulletin has received signal recognition throughout the English-speaking world. To Dr. Reilly belongs the credit.

At death to have it chronicled that thousands are living because you lived and worked might well be the highest ambition of him who aspires to be remembered as one of mankind's greatest benefactors.

The following tributes to Dr. Reilly's memory are from Commissioners of Health under whom he served as Assistant Commissioner:

"The best praise that can be given Dr. Frank W. Reilly is to compare things as he found them with things as he left them, and to let

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the facts speak his praise. If it be argued that our age is one of advancing standards, the answer is that standards advance as they are carried—advance is not automatic—and Dr. Reilly carried standards.

"He led in all of the fights for better things in living, in his powerful health sermons. His work against sewage-laden water, smallpox, yellow fever, etc., all helped, but it was mainly as a preacher of health sermons that he won his proud position as 'Chicago's most useful citizen.'

"We who are left behind can best pay him tribute by fighting on always and ever for the things for which he strove.

"W. A. EVANS, M. D., Commissioner of Health."

DR. FRANK W. REILLY—"CHICAGO'S MOST USEFUL CITIZEN."
DISCOVERER OF THE VALUE OF A HEALTH "STORY."

"Chicago has lost one of its most useful citizens and the medical profession one of its most learned members in the death of Dr. Frank W. Reilly. Dr. Reilly was a man of rare attainments. His knowledge of the literature of medicine was phenomenal, and of the literature of hygiene and sanitation he was master. As a writer on sanitary matters he had no superior and few equals. He could write of statistics in the most instructive and charming manner. His diction was unexcelled, his argument convincing, and his summing up left nothing that could be profitably added.

"Dr. Reilly became associated with the Department of Health in 1894. He was appointed Assistant Commissioner in January, 1895, and it is most gratifying to me that he remained through changing administrations to the end of his days in the position he more than filled. The

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finished publications of the Department of Health since his appointment, that have been of such educational value to the community, were edited by him, though appearing over the signature of the Commissioner of Health. He was always modest and unassuming, and no amount of coaxing could induce him to sign his name to any Department communication, even though he were its author in its entirety. The Bulletins of the Department became of national interest to sanitarians and were quoted almost weekly by the London medical journals.

"Dr. Reilly's loyalty to the cause he had in hand and to me, his faithfulness to duty and his warm, generous, loving nature endeared him to me. No man has ever been more closely entwined in my affections than he. His death brings profound grief to me and it is an irreparable loss to the community.

"ARTHUR R. REYNOLDS, M. D.,
"Commissioner of Health, 1893-1895, and 1897-1905."

"Dr. Frank W. Reilly was one of the notable characters in the annals of medicine and I shall always deem it one of the treasures of my life to be able to claim him among my dearest of friends.

"As a result of intimate association during my term as Commissioner of Health his intrinsic greatness was forcibly impressed upon me. I early learned to love, honor and respect him.

"As he should be measured by deeds and accomplishments Dr. Reilly's achievements were his best eulogy. His works, conspicuous for what he regarded the good of the people. Serving in his convictions, and [illegible] without fear of consequences, a house of his course of action, he deemed it his duty to pursue, he [illegible] a broad catholicity of [illegible] with [illegible].

"His [illegible] characteristics were his [illegible] [illegible] [illegible]

means for the improvement of the public health. It was with the active and fearless co-operation of Dr. Reilly and against the opposition of a large number in the medical profession that antitoxin was introduced into Chicago and made available at a reasonable cost to everybody, and it can be truthfully said that many thousands of lives have been saved since its general introduction.

"His knowledge of sanitary affairs through his connection with the army and the State Board of Health was far in advance of anyone I ever met. His unflagging interest in the poor of the city and his great desire to relieve their suffering in the quickest possible manner were evidence that he had the true and proper conception of the duties devolving upon those charged with the administration of the Health Department.

"His untiring efforts, under most discouraging conditions, to restrict the sale of impure milk in the city resulted in the saving of the lives of thousands of the little poor ones and should be a blessing forever to his memory.

"In my business life I have never known a man who under all kinds of trying conditions could throw as much sunshine around his co-laborers as Dr. Frank W. Reilly. His valuable experience and wisdom and intense interest in the public health will be greatly missed by the people of Chicago.

"WM. R. KERR,
Commissioner of Health, May, 1895, to April, 1897."

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INTRODUCTION

Generally speaking, health officials are men who have had no previous training for the duties of their office. Until a few years ago there were no schools giving training to prepare a man for health work. The schools which taught sanitary and chemical engineering prepared for certain parts of the work. This phase of health work, however, has been largely transferred to departments of public works. In view of the preponderating amount of medical work, it has usually been held that trained medical men came more nearly being qualified for health work than any other group of men. It is true that medical training qualifies for a certain side of health department work, but the work is many-sided. The reason that medically trained men have been held to be best for health department work is that there have always been glimmerings of the central purpose of health departments; namely, that all men should be healthy and strong, and that all other elements are contributory thereto. It has been recognized that a medical man's training made him the best judge of the human machine. It is this idea, rather than the fitness of the physician's training along special lines of work, that has caused him to be chosen so generally as health officer.

Recognizing that most men acting as health officers need opportunities to learn their business, certain States have inaugurated State health officers' schools where local health officers assemble at intervals for a limited period of study. New York and Indiana especially have made notable advances along this line. The universities and colleges now giving courses in sanitation and hygiene are beginning to meet the demand for trained health officers. The better organized health departments of the country are being drawn upon from time to time for trained men to take charge of temporary epidemic conditions and for health officers of the more discriminating towns.

In spite of the few agencies which are training men for health department work and training health department men for their work the average official finds himself very much at sea. He undertakes his work confronted with the necessity of learning it.

A health department makes use of the accumulated wisdom of all health departments. No one can turn the discoveries of others to his own advantage without incurring an obligation of honor to contribute something to the general welfare. Certain health departments are able to maintain research laboratories. The results of their researches are of great value to other communities as well as their own. The Chicago Department of Health has made use of

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their work just as freely as it had occasion. With its very limited resources it has not been possible to contribute in kind to any material degree. We have decided that the best way in which to discharge our obligation is through this quadrennial report. In this report we give such statistical data as is deemed proper for reference purposes and in addition we present some conclusions as to methods evolved from our experience.

The volume of business done by the health department of a city of more than two million people gives opportunity for valuing different methods of procedure which would be lacking in a smaller city. Many of the observations made and conclusions drawn by us need to be modified when applied to cities of smaller size and in different climates. For example: Methods of control needed for the milk supply of a town which has its milk hauled by railroad differ greatly from those required for the supply of a town where the milk is hauled by wagon, and differ still more where the supply is from town cows. Nevertheless the basic principles remain the same; the changes are in the details.

The number of requests which we receive for information as to methods used is very large. These lead us to believe that a report such as we are presenting will be of service. In addition, our own people should be benefited by knowing just what the methods of the Department are and what the reasons for them may be. All officials of the Department give just as much time as their other duties permit to such explanation; but these efforts leave a large proportion of the population still unreached. This report from the Department of Health will remedy the situation somewhat. These are the reasons responsible for the type of report which is herewith presented.

We fully understand that the conclusions drawn by us are not universally applicable. Furthermore, departmental usage will change as things progress. The present health department methods are about what Chicago is ready for. A few years from now when the people will have become more dissatisfied with preventable deaths, poverty from illness, and extravagance from neglected people, they will demand a more militant health department. It would be very unfortunate if there should be such a crystallization of method as would impede progress. It is to be understood that the logic responsible for present methods becomes illogical when matters have progressed beyond the present status.

Much of this report was written by the Commissioner of Health, and represents the views of the bureau heads who have made up the Department council. It has been the policy of these men to attempt to cure the ills of society as rapidly as the people were willing to have them cured; to prevent preventable deaths as fast as the people were willing to have them prevented. They have not only judged of the situation with regard to a disease but they have crowded the

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public to accept the remedy, so far as it would stand crowding. This creates a situation for analysis; that is, as to how rapidly the people are willing to be benefited. The men in the Department are men of learning, of judgment, of many years' training in their work, and they are singularly devoted to duty. To them belongs the credit of a Department which has done something for the establishment of a belief that American municipalities are capable of beneficent government—a government for permanent good.

Credit for this achievement is justly to be shared by the Mayor. It has been said that the way to get a good wife is to begin with the grandmother. The way to have a good health department is to get a good mayor. Nine hundred and ninety-nine out of a thousand visits that are made to a health department are made by people who want the laws violated, or who want to use the Department for some purpose of their own, or for some purpose other than the general public good. It is true that the great majority of these people honestly believe the circumstances of their case peculiar, and, therefore, that the law or custom should not apply to them. The great difficulty is that men cannot often value relations which closely concern themselves. In addition, it is difficult for men to see beyond the present or the very near future. The appeals in behalf of the momentary best, though this means future crippling, hazard and oftentimes destruction, are innumerable. Appeals for the personal best, though it is not compatible with the community welfare, come hourly. Men go with all of these details to the Mayor. To them and for the moment they are of paramount importance. They do not consider that the mind of the city's executive should be rested and strong; that all of his mental energy should be reserved for the viewpoint of the whole. A weak mayor, constantly beset by these presentations, is not of much service in conserving the public health. That the Department of Health has been able to protect the rights of those who have not come to the front against those who have, is largely due to the "backbone" of the present Mayor. To say less than this would not be doing him justice.

Wells terms us a lawless people. A large proportion of the people hesitate to obey the law until they have discovered one or both of two things: First, whether they can get excused from the law; second, whether their neighbors are going to obey the law. This means that the operation of the law is uneven. Government being unequal to the task, sooner or later accepts the situation and allows things to drift, and they go from bad to worse until latent public sentiment is stirred. Public sentiment being accustomed to latency and being unaccustomed to power strikes out recklessly, often revengefully and usually illogically. Laws are enacted which fit the momentary view well enough, but which are entirely without regard to the normal agencies of government or the usual public sentiment.

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Observances are inaugurated which do not fit into the usual spirit of the people. The aroused public sentiment considers that the situation is cured. Sentiment becomes latent again and the old conditions are resumed.

Whenever the load put on a machine is up to or beyond its capacity, the operations of that machine becomes uneven. The unevenness of American administration is the result of this relation between power and load. Basically we have governmental machinery which is ample to carry the normal governmental load. Our laws average a little stricter than the laws of the better governed lands on the world. We have that division of government into administrative, legislative and judicial branches which is regarded as representing the highest type of utility. The trouble is not in the machine itself. That which makes it heavy is that [illegible] people do not obey the law without question.

[illegible] in several ways. In our Department it [illegible] necessity of inspection service. Instead of one visit [illegible] three visits in seven days are required. In a [illegible] will [illegible] the man [illegible]

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When a man uses his influence or his political power to have himself or his business made an exception under the law he has set a precedent which will eventually be his undoing. He cannot expect his political friends to grant him what he asks and refuse that which is asked by his competitor.

The cost of maintenance of the Department of Health is raised, its efficiency is lessened, and the health of the people is injured by the efforts of aldermen to have their friends excused from the operation of the law. But for this the aldermen are not responsible. The trouble goes back of them to their constituents. In only two instances in four years have people called at the Department to complain that there was too much contagious disease in their neighborhood. I have never heard of any group of people going to an alderman and asking him to see that their ward be cleared of contagion or thanking him for standing against those who wanted to do things that would spread contagion, yet the reverse is often true.

There is but one way to correct this condition. That is to secure the active, participating interest of the public in equal laws and in equal enforcement of the laws; the interest of the mother in milk; the father, in contagion; the neighbor, in consumption; the patron, in food; the laborer, in working and living places.

When this condition prevails the alderman will be anxious to serve all of his people instead of a few. His activity and friendship will be a great asset for the common good. A large percentage of the aldermen are men of courage and common sense. They see what is best for the mass of the people and they stand for it. Oftentimes they see it and act on it even when the people themselves do not grasp the situation.

W. A. E.

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SOME IMPORTANT PHASES OF HEALTH WORK

REVIEWED BY THE

COMMISSIONER OF HEALTH

W. A. EVANS, M.S., M.D., LL.D.

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THE LAW AS IT RELATES TO HEALTH DEPARTMENTS.

Health departments operate under police power. Police power is the right of a community to do whatever is required to protect its health or its morals. This is a fundamental power for the protection of society. In extreme cases, and in great emergency, individuals and groups take back the power of self-protection and exercise it personally, and public sentiment condones the offense. This is cited for the purpose of showing how basic is the exercise of this function.

When the emergency is not so great, but still is momentous, the community steps in and operates under laws which contravene some of the fundamental methods of judicial procedure. For instance, if a man has smallpox he can be deprived of his liberty without trial by jury. The ordinary methods of trial through which a community protects itself would operate to do the public great harm if the man having smallpox were put on trial.

Property can be destroyed without due process of law if that property is a public menace and due process of law would make it more so, or process of law would not cure the situation when the time element was taken into consideration. The furthest development of police power in this last particular is found in the procedures used by the Fire Department. A fire department in order to stop the spread of fire can destroy property as it deems wise even though the buildings destroyed may be somewhat remote from those which are burning.

The rights of the people to protection along these lines are inalienable. The people may delegate the power of passing laws to legislative bodies, but if the laws which are passed do not furnish the protection desired, they are void and the rights of the community stand upon basic police power. This failing, the people have the right of mass action.

All police power laws must conform to three basic requirements:

1. The situation sought to be met must be genuine and of sufficient importance.
2. The laws passed must furnish adequate protection.
3. The operation of the law must not unreasonably interfere with liberty or with the rights of property.

According to the second of these principles if a law which is passed to protect health does not protect it the law is invalid and the people have the right of protection under general police power.

Laws passed to protect health are never tested on these grounds. The resistance comes from those who believe their rights are invaded. Therefore, the precedents and the literature of police power are upon its limitations. Every inch that is gained in a decision is used by the shrewd

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lawyers who are contending for their clients to gain an additional inch. In this way there is coming about an increasing limitation as determined by precedents. The operations of contagion and other etiologic factors of disease are not being limited.

Therefore there is urgent need that somebody should start a different line of judicial decisions, setting precedents for the trial of cases under the second principle of police power.

That we succeed in controlling preventable disease better now than we formerly did is because public intelligence is constantly improving. Contagion is being controlled by public intelligence while judicial decisions are getting constantly worse. One of the reasons why they are getting worse is because the government of public opinion is getting efficient enough to compensate for "mushy" laws and weak decisions.

In New York the law provides that injunctions shall not issue against the health department. The theory is that the things which must be done must be done oftentimes without delay and that the health board is a better judge of this necessity than anyone else. Of course, no one is deprived of his right to his day in court as the right of any damaged man to recover for his damage is not abridged. This represents one extreme. It is just as extreme in the other direction for a court to grant an injunction in a health case without hearing the facts; yet this is the custom in many places.

A police power decision must be on the facts. Is the community being protected; is this man being deprived of his liberty; is it necessary to deprive him of his liberty to protect the community; is this a reasonable demand on the part of the community; is it being reasonably administered? These are questions which must be answered in every police-power case and they can not be answered except on a showing of the facts.

If these decisions are studied it will be found that in many instances the judges have had to read facts into the evidence and quite frequently they read in expert opinion as well. These facts and opinions are usually the opinions of the judges based upon their observations of matters in every-day life. There are certain lines in which their experiences eminently qualify these gentlemen. There are others where they do not.

For instance in a recent vaccination decision, the only evidence of fact before the court was the affidavit of the health commissioner that smallpox was then epidemic in a certain section of the city where a child was excluded from school. There was no expert opinion before the court as to what was necessary to protect a cosmopolitan city of two million inhabitants against smallpox, and that city was a railroad centre having a large floating population drawn from sections where smallpox was always present. Yet the court ruled that the city had no right to adopt a certain procedure because it was not a necessity for the control of smallpox in that city and there was no epidemic in the city. Where the court got these facts I do not know, but certainly not from the records.

To say that vaccination of a city shall only be done after the fact has been established that an epidemic exists, is no more an expert opinion

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than it would be to say that laws requiring that buildings be made fire proof shall only be operative while a house in the neighborhood is burning. As a matter of fact, when smallpox gets a good hold in a city of two millions it can be routed out; but it requires two to three years to do it and in the meantime several thousand people will have had the disease, and individuals will have been deprived of many of their rights.

In a manure case tried in Chicago the decision was on the expert opinion of the court as to the harmlessness of flies. In all probability the common knowledge as to the harmfulness of flies, in the absence of testimony, would cause the court to look differently on it now.

These things do not represent any inherent wrong; the presentation is where the fault usually lies. We have not seen the community point of view because our lives, our point of view, our method of approach to any subject, is intensely individualistic. The habit of looking on the community side of the question is a growing one. We are just beginning to see that in reality it is the side of liberty.

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HOUSING.

Houses in which people live must be properly ventilated, first of all. This is treated of elsewhere. There must be proper house drainage. The principles of household drainage are not only well worked out but they are well applied. Homes, which from the general hygienic standpoint are not twenty-five per cent correct are ninety per cent right on house drainage.

Hopper closets are below the efficiency standard of inside down-washing toilet bowls with stacks vented to the outside, but they are above the standards of air, light, cleanliness and wall dryness, which prevail in the houses where they are located.

Besides ventilation and drainage, there remain certain other requirements relating to sunlight, ground occupation and construction which are commonly treated of under the term housing. This chapter will deal with these.

In Chicago the people of moderate and small means, in the main are living in frame cottages two and three stories in height. These cottages have a small yard in the front and a larger yard in the rear. There is about a four-foot space between the houses. Frequently there is a second house on the rear of the lot; occasionally there is a third house on the middle of the lot. In a few instances there is a single house extending from the front to the rear of the lot with entrances to the different flats opening on a passageway at the side. The majority of these houses are in bad repair. The worst of them are being held by the owners in their present condition awaiting the extension of business or factories to the neighborhood. Where the houses are owned by the occupants, they have been bought, as a rule, by men of small means at a time when their children were small. When their children begin to get into their teens, these owners usually sell and move into new cottages further out.

Other houses are owned by men of the neighborhood who operate them as neighborhoods. The rentals that are paid for these houses, with the small expenditures for maintenance, make them very profitable investments. Yet, the changeable character of the neighborhood and the bad standards of maintenance prevailing, operate to prevent any of these houses from being built for speculative purposes. The building of new two-story and three-story houses is limited to new streets and new districts. In consequence of these several factors, our people of small income are housed in very ramshackle old cottages.

And yet, the Department has done nothing to encourage building in these districts during the last four years. If any building for these people had been done during the last four years, we are sure that it would have been in the nature of four to six-story tenements occupying

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the entire area of the lot. Such houses, even with better floors and walls, better plumbing and better general cleanliness, are less hygienic than the present cottages whose walls leak air and into which some sunshine can penetrate.

The average working man in the ranks of unorganized labor should not pay over ten dollars a month for his house, including the cost of heating and water, and this house must be within walking distance of his work. If he pays more than that, he must take boarders. Boarders are bad for the family socially and from the health standpoint. As a general proposition, cheaper quarters without boarders are better than better quarters with them.

There should be some part of the lot unoccupied that air, light and sun may get into the rooms. There should be space for grass, flowers, vegetables, if the proper balance for health is to be preserved. These things are not possible unless the price of ground decreases or the profits are waived or some cheaper method of building is devised.

We believe that there is ground for hoping for the last of these alternatives. When it offers, the Health Department would like to see the establishment of residential districts in the vicinity of employing establishments and the building of proper sanitary and hygienic houses in these districts. In such houses there should be small sleeping rooms and large living rooms; there should be porches and roofs, so constructed as to invite occupation in all seasonable weather.

In each block of such houses there should be laundry facilities for the people of the block. The cooking facilities could also be advantageously massed; in some instances it will be desired. The bathing facilities will also be massed. Those community conveniences which have been thoroughly established in the better class of flat buildings will be found equally advantageous and in time will be greatly desired in houses for men with small incomes. In building in this way, there will come about the setting aside of playgrounds for children and spaces for vegetation here and there.

HEALTHGRAMS.

From *The Bulletin.*

"Dirty air is death."

* * *

Get the fresh-air habit.

* * *

Good air means good work.

* * *

"Too much fresh air is just enough."

* * *

Pneumonia is the child of faulty pneumatics.

* * *

Fresh air is the best life assurance agency.

* * *

To arrest a cold, liberate the foul air in your room.

* * *

Foul air befouls the body—be dirty and you'll be sickly.

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VENTILATION OF BEDROOMS AND LIVING-ROOMS.

Bedrooms are the easiest of all rooms to ventilate. The proper plan is to provide sufficient covering for the beds to make the inmates comfortable and then to raise the windows widely.

The making of the inmates comfortable requires some thought in cold climates; very frequently the covering is much too heavy and quite frequently the mattress allows the occupant of the bed to chill. Bedding which buttons or fastens is often necessary. Sleeping bags permit but little chilling up and down the body and are not disarranged by the person in turning. A layer of soft, non-creaking paper between the clothes or a layer of oilcloth similarly placed will give as much comfort as several layers of quilts. A similar covering for the mattress, or paper slipped between two mattresses is often wise. A feather-bed keeps one warm with less covering than a stiffer mattress which permits draft cracks around the body.

The windows should be so placed with reference to the beds, or vice versa, that the wind blows over the inmate. The greatest good comes from having the hot, exhaled air blown immediately away from the person's head.

In cold weather the bedroom temperature should not be higher than 40° F. At this temperature the breath which rises from the nostrils will mount out of the breathing zone rapidly enough so that the next inspiration will not include much of the expired air.

If the temperature is to go as low as the freezing point, care must be taken that the water in the radiators does not freeze. Usually trouble will be spared by removing radiation from the bedrooms.

Bedrooms should be small and should have low ceilings. Everything possible should be done to overcome any disposition to make them living-rooms. The room, the mattress and bedding especially, should be sunned and aired as often as circumstances will allow.

Sleeping outdoors has become a great fad, and rightly so. The air in a room, even with no radiation and with windows wide open, is still somewhat less invigorating than the air of a sleeping porch. The person sleeping on a porch has a freshness of feeling which sleeping in a room does not give. Perhaps most of this is due to the greater blowing of the wind in the open.

But outdoor sleeping presents many difficulties. It is apt to be light and noisy in the early morning. It is very difficult to provide against high winds, rain and snow. If canvass is used as a protection, it flaps noisily. Probably lattice work or sliding windows is the only arrangement which will be satisfactory. Either of these arrangements, however, can be made so snug and tight as to present no advantages over an indoor room. Tents are usually noisy; when renewal expenses are figured they

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are not economical; they are portable but in about every other particular they are less desirable than other arrangements.

The above is written with winter conditions in mind.

In the summer time comfort demands that ventilation be free. In consequence windows are usually kept open. A square foot of open window space in the summer will be much less efficacious in ventilating than will the same space in the winter. (This, however, is not of much consequence as the disposition is to throw the windows widely open). This is because of the power of differences in temperature to move air. However, a windy day. whether in summer or winter, furnishes more air moving power than a quiet day and therefore modifies the size of the opening requirements much more than do any temperature elevations ever found in sleeping or living rooms.

On rainy days windows are put down even in the summer time. But on those days there are two conditions which modify the harm done by the small intake openings. The rain greatly purifies the air, cleans it of its bacteria and dirt, slightly diminishes its CO_2 and frequently increases the bonding power of its oxygen. When the rain is accompanied by wind, as it so frequently is, the ventilating power of an opening rightly exposed is very greatly increased.

Sleeping rooms should be simply furnished. If tapestries and expensive curtains are used dirt will be allowed to accumulate in them, as it will not be on woodwork or tile. Furthermore, I think we can safely assume that windows covered by expensive curtains will always be kept closed. The expense and the trouble from frequent soiling is altogether too concrete. Deductions from the laws of averages, arguments more or less didactic, the results of chemical and bacteriologic examinations, are ineffective when they come in conflict with a woman defending her curtains.

All bedrooms should be aired out by strongly blowing wind at least once a day.

The problem of the winter ventilation of the living-room is very much more difficult to solve than is that of the bedroom.

The living-room is to be occupied by people who are not active physically. After the morning cleaning is over the housewife is engaged in caring for the children, sewing, reading, and other occupations in which there is no great muscular activity. The body, therefore, is not making a great amount of heat. The clothing is light; in consequence body radiation is high; skin and extremity circulation is not at a maximum; the feet easily feel cold. Therefore a higher temperature is required than in a bedroom where the occupants can have as much covering as may be needed.

About 65°F. is a proper temperature for such a room. In this country as high as 68° F. may be required by some badly trained people. Higher than that the temperature should not go. Nor can it be much under 65° before a fair minority of the occupants begin to complain of the cold. As the heating and ventilating arrangements of such rooms are

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usually simple, a fair part of the heating of the air taken into the room is and can be properly accomplished by mixing the cold, fresh, incoming air with the warm air of the room.

Here is the proper field for the great horde of patent window sash ventilators. The principle involved is that the air coming into the room is deflected toward the ceiling. In this way the downward currents of the window-chilled areas are overcome and the fresh, cold air flows rapidly to the ceiling where it mixes with the warmer air, and then falls to the breathing zone. Such a plan, coupled with an open fire or a fire-place with one or more gas jets, is excellent. Fantastic fire-logs are abominable. Their many concealed openings mean that here and there will be found escaping a stream of unburned gas. Most of this, of course, will go up the chimney; some of it will get into the room. Therefore if there is a fire-place opening, use a wood or coal fire or gas, to aid ventilation.

But an open fire means a room very unequally heated and cold drafts along the floor, unless the air coming in through the windows is directed toward the ceiling.

Occupants of living-rooms are generally at liberty to change their positions in the room until they find just that position between radiation and wall chill which is most satisfactory to them. The absence of this privilege constitutes one of the great difficulties of schoolroom, factory and office ventilation.

The device used at the window should be nothing but a deflector. The deflection should be without unnecessary bends and turns, since these increase friction and create counter currents. The size of the intake should be changeable according to the outside temperature, the direction and force of the wind, and the sunshine or shadow. It should not be burdened with dust-collecting apparatus which will interfere with its capacity as an intake. On days when the incoming air is offensively dusty the room inlet can be screened by cloth or other substance so constituted and so placed as to be visible, removable and cleanable.

In many living-rooms it will be possible to place the radiation in such a way that the incoming air can be warmed, at least in part. If the radiation is so placed it will be possible to increase the amount of air taken in without discomfort to the occupants of the room; it will decrease the cold floor currents; it will decrease wall chill; it will increase the zone of comfortable occupation of the room.

If the room is not provided with deflectors, then such provision should be extemporized by screens, chairs or other obstacles.

On days when the wind is blowing strongly, window openings on the lea side of the house will act as outlets. The currents of air from the windward side of the house will be a stronger moving force than the difference between the temperature of the room and the outside temperature. Under these circumstances it is wise to lower the windows from the top that they may act as outlets.

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When the air comes in through a window inlet and is deflected toward the ceiling, the outlet should be through some window opening, located at the bottom of the sash rather than at the top. The window chosen for an outlet must be on the lea side of the room. If the room has but one exposure, and therefore the outlet must be in the same relation to the wind as the intake, then the outlet window must be lowered from the top. Usually, however, under these circumstances the outlet provision must be through and around doors into other inside space and thence to the outside.

Under any circumstances the windows must be periodically raised and the air allowed to blow freely into the room. This should occur at least four times during the twenty-four hours. During the period of "blowing out" the occupants can leave the room or put on heavier wraps, or occupy themselves with work demanding greater muscular activity.

Finally, the question of ventilation of living-rooms is comparatively easy. It is more difficult than ventilation of bedrooms. The percentage of occupants to space occupied is small. The occupants can change their places in the room so as to find the zone of greatest comfort. They can even change the nature of their work so as to secure comfort. For these reasons the ventilation of living-rooms is very much easier to accomplish than the ventilation of offices, school-rooms and factories. It is more a question of use than it is of installation.

HEALTHGRAMS.

From *The Bulletin.*

Taking in fresh air is healthier than putting on fresh airs.

* * *

Good ventilation is the first essential in the purity of the home.

* * *

Pure air makes pure blood—pure blood makes you disease resisting.

* * *

There are thousands of cases of air starvation in Chicago to every one caused from lack of food.

* * *

Bad air and a high temperature in the schoolroom are certain to produce a low grade of scholarship in the pupils.

* * *

Plenty of good fresh air will make the fires of life and health burn brightly; therefore, don't hibernate; ventilate.

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HOUSEHOLD WASTES.

Household wastes are divisible into sewage, garbage, rubbish and ashes, the offensiveness of these being in the order named.

Garbage.—By garbage is meant kitchen waste. It consists of animal and vegetable matter moist enough and unstable enough to be fermentable and putrescible. Wood, paper and straw are therefore not classed as garbage.

Garbage does harm in several ways. It is offensively odorous; it attracts, feeds and furnishes a breeding place for flies; it enriches soil so that it becomes food for bacteria. For these reasons the population per acre affects the question as to what should be done with garbage.

If there are no alleys, garbage removal is demanded more frequently than when there are alleys. It should be borne in mind, however, that a fair percentage of the people live on the alleys and the alley gate is for them the front gate—the alley is their street. Such sections of the city should be treated as having no alleys or the alleys should be treated as streets where the garbage box is at the front door.

Shall there be garbage cans or garbage boxes? Garbage cans are easily stolen, but from every other standpoint they are superior to boxes. A summer visit to the poorer parts of any city will convince anyone that garbage thrown on the ground attracts more flies than does garbage in boxes and cans. The losses from the theft of garbage cans and the failure to provide a can because of its insecurity are large factors in the practice of throwing garbage on the ground.

Garbage cans or boxes should be both fly and rat proof. They should be emptied every day in summer and twice a week in winter. Garbage is more of a fly food and less of a fly breeding place than stable manure. It is also more offensive. It is, therefore, unsafe to allow the same period between removals that is permissible in the case of stable manure.

Garbage should be removed in water-proof wagons and the wagon haul should be short. A wagon haul of more than two miles after the load has been collected is an inexcusable waste of funds. The wagon boxes loaded with garbage should be put on flat cars on street railway tracks. The flat cars can be kept in ward yards ready to receive loads and can be hauled therefrom during the day and night hours when the street car movement is small. In this way the per ton collection and hauling charge varying from two dollars to four dollars a ton in different cities should be reduced twenty five to fifty per cent. The cost of the street railway part of the haul will be excessive if it passes ten cents per mile.

[illegible] in garbage cannot be lost if the economies are considered. The greatest value of garbage lies in its use for feeding; its

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second value is its fat; third, and usually coupled with the second, is its value as fertilizer; fourth, is its fuel value.

There are but few ways of getting food value out of garbage. It can be fed to hogs and poultry, but its use as food is always risky. If it is fermented or putrified, animals fed on it show a very heavy death rate. Poisonous substances are liable to find their way into it.

Around Denver, it is thought by some that the garbage fed hogs contract tuberculosis from bacilli in the garbage. The feeding of garbage to hogs, therefore, requires a prompt removal service; daily removal being a necessity. In Denver the hog-feeding business is organized, the city being divided into small districts and the removal taking place daily. The climate does not favor putrefaction. The nature of the country permits of plenty of space around the hog pens. There the value of the garbage is enough to pay not only the cost of disposal but also the entire cost of collection. The only cost to the city is $1,500 a year for supervision. Presumably, it is profitable to the contractors at that.

There are those who strongly advocate that the temperature of the garbage be brought to at least 160° F. in order to kill the tubercle bacilli. This method is only applicable in smaller cities and towns and in cities favorably located for it.

The next best method of garbage disposal is treating it for fat and fertilizer. The Cleveland figures indicate that the fat and fertilizer recovered from ordinary garbage will sell for enough to pay for all operating charges, repairs and renewals and then pass to the collection fund enough to pay about one-tenth to one-fifth of that charge. Different kinds of garbage vary greatly in their fat and fertilizer values. The more extravagant the kitchen the greater the garbage value. Large hotels, clubs and high-priced restaurants usually sell their garbage for a good deal more than the collection and hauling charge.

Under the following modifications the sale of fat, fertilizer and by-products should pay the entire cost of operation of both treatment and collection:

1. Combine the dead animal service with the garbage service. (The details are elsewhere explained.)
2. Secure all garbage in the city whether produced by hotels, restaurants, clubs or private families.
3. Eliminate the long wagon haul, substituting therefor a shorter wagon haul, and an increased haul by water, street railway, or railroad, according to the economics of the different situations.
4. The fertilizer value of untreated garbage is not great. Such use of garbage requires that it be mixed with lime, lime rock, phosphate rock, manure or straw as the particular requirements and economics may suggest and the mixture promptly ploughed under. This ploughing under must be a daily service in hot weather, otherwise the garbage is so odorous and attracts so many flies that the people will not permit this disposition of it. This disposition is therefore seldom applicable.

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5 The use of the fuel value of garbage is the method usually chosen for smaller cities, the food use being possible in only a few places. The cost of installation of a fat and fertilizer plant being usually too heavy for a town of less than 200,000 inhabitants, the burning of garbage has come into quite general practice.

Wet garbage may be said to have no fuel value. The fuel value varies with the town, the rain fall, the season of the year and the draining allowed, but speaking generally the fuel value of garbage is not greater than the heat required to evaporate its moisture. The Milwaukee figures on this point are very instructive. However, certain parts of the rubbish which need to be burned and can be advantageously burned in a central plant will furnish some fuel value. The amount of heat is dependent upon the amount of rubbish, ashes and other refuse which is mixed with the garbage.

The garbage which is kept ninety per cent pure can be advantageously handled by treatment for fat and fertilizer. It is easy to get this kind of garbage in the better parts of town; it is more difficult to obtain it in the poorer parts. It is an open question as to whether a double or a single collection of garbage and rubbish is less expensive. A single collection requires but one receptacle and requires less supervision. A double collection is the cheaper if the rubbish is to have a short haul; it is the more expensive if the rubbish is to be hauled a long distance.

Rubbish.—There is little harm to health from rubbish. The usual health argument in favor of its destruction is that some part of it comes from households where there has been contagious disease. As the quarantine laws prevent the removal of all articles from premises where contagion is present, the incidence of danger is small. This is true after due allowance is made for the imperfections of quarantine in acute contagious diseases and the prevailing methods in tuberculosis, pneumonia and colds. The incidence is reduced to a minimum by the prompt death of pathogenic organisms when dried or exposed to the air and light. There is a diminishing fear of fomites. In the absence of bacteriologic data on this special point we are warranted in drawing conclusions from related data. There is practically no danger of contracting a contagious disease from mattresses, bedding and rags which have been exposed to the weather. Other articles which go to make up rubbish are still less liable to spread contagion. What is to be done with rubbish must be determined by other considerations than the spreading of contagion.

Very light rubbish, such as broken furniture, mattresses and papers, should be burned without hauling, the expense of hauling being prohibitive. Cans and crockery should be thrown into the fire to burn off the organic matter since this is such fine fly food and then the purified cans and crockery should be treated with the ashes.

Burning of rubbish in the building fires should be encouraged. It is inoffensive and has enough fuel value to make some saving in the fuel bill of the premises. The refuse not combustible on the premises can be advantageously burned by portable burners, such as those used

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by the Street Department of Chicago. The heavier and less combustible rubbish should be collected in the same box with the ashes and then used for filling purposes when the filling can be delivered by a short haul. The transportation should be by wagons. Long hauls should be made by street cars.

Ashes.—Ashes have no health relations *per se*. They have no fuel value except in high grade furnaces. When street sweepings and rubbish are mixed with and covered with ashes they make excellent filling; without ashes they are objectionable. Therefore, the best use for ashes is as filling. If a city has no gulleys, ponds, clay holes, marshes or low places that need to be filled, then ashes can be burned with the rubbish, and perhaps street sweepings and garbage also, and the resultant ash may be used for pavement and road foundations.

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TREATMENT OF SEWAGE.

American sewage is too dilute for use on sewage farms. In Chicago the sewage averages over two hundred gallons per capita. *per diem*. This figure is arrived at by measurements made at the Experimental Sewage Station at Thirty-ninth and Lake Michigan and it is supported by calculations based upon the amount of water pumped by the city pumps. When the per capita production of fertilizer, with the addition of the per capita allowance for fertilizer values produced by other animals and trade wastes are added together and dissolved or suspended in two hundred gallons of water, the product is too low in values to warrant any effort for recovery.

Paris and Berlin are the only large cities in Europe that make use of sewage farms. Without raising the question of profitableness there, the following considerations must be taken into account:

1—The sewage there is much more concentrated than here.

2—Fertilizers are more valuable there than here.

3—Farming is much more intensive there than here.

4—The labor needed for canals and dykes is much less expensive there than here.

In arid regions the thing to do is to put the sewage on the land, but elsewhere in the United States this is not economical. The cheapest method of sewage disposal is by dilution, but this method is not available for cities generally. In those cities situated adjacent to a body of salt water or near streams which reach salt water within a few miles, it is economical and fulfills the requirements. Even here certain limitations arise. For example: In New York City, it is held that the sewer outfalls are so close to piers and docks that high tide carries sewage into covered piles and platforms whence it is carried by flies to households. In Baltimore the use of adjacent salt water for oyster and fish beds makes this proposition of sewage undesirable.

Lake cities are peculiarly menaced by sewage. Many of them throw their sewage into a body of quiet water and take their drinking water from the same source. Oftentimes their sewer outfalls are located near their water intakes. Moreover, there is uncontrolled shipping, carrying large numbers of passengers, free to discharge ship-sewage close to water intakes and also free to take the ship's water supply at any point desired. Except in the vicinities of inflowing and outflowing streams, there are no currents in these lakes aside from those due to the wind. Therefore dilution and oxidation are not so prompt as they are in flowing streams. Cities located on the lakes should either have a water supply other than the lakes or else they should not empty their sewage within five miles (better ten) of their water intakes, nor should they allow other cities to place sewer outfalls within four miles of their intakes.

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They must control the shipping and prevent the pollution of water in the vicinity of intakes.

The Lake Michigan Water Commission has determined the following points with relation to the voluminous amounts of sewage in Lake Michigan:

1. Lake Michigan water twenty miles away from large sewer outfalls is a good, safe drinking-water, excellent in quality.

2. On account of the large volume of water, its low chemical content, and its temperature, it will take care of shore population much in excess of that now existing.

3. The present conditions of the shore waters near all sewered towns are such as to render their use for drinking purposes dangerous.

4. South of an east-and-west line passing through Seventy-fifth street in Chicago to a similar point in Indiana (an area of nearly 100 miles) the water is either all so polluted or so frequently and easily made so that no city should take its water-supply from it and no boat should be allowed to fill its drinking-water tanks from it.

5. There are no constant currents in Lake Michigan.

6. The currents in Lake Michigan are due to the direction of the wind. There is always a surface current with the wind and usually a deep current opposite to the direction of the wind.

7. Irregularities in shore contour, for example, bays or promontories, at times will operate to protect an intake; at other times will have no influence on the water at the intake; at times will operate to foul such water, according to the direction of the wind. For example, a bay protected by a natural or artificial promontory on the north, with the wind in one direction, will have bad water pushed out and good water pushed in; when the wind is in another direction the bad water would eddy around the intake.

8. In the Lake Michigan area there are no prevailing winds.

9. In Lake Michigan there are no prevailing currents.

10. As storms habitually stir Lake Michigan to a depth of 40 feet and occasionally stir it to 60 feet, purification by sedimentation is not effective in water less than 50 feet deep in Lake Michigan.

11. As the highly effective saprophytes are not abundant in Lake Michigan, purification is by oxidation, dilution and sedimentation.

12. Therefore the rapidity of purification is not as great as it is in fouler waters with a high saprophytic bacterial count.

13. A flow of seven miles in Lake Michigan is not sufficient for the purification of a massive amount of sewage.

14. With a fairly high and steady wind sewage streams retain quite definite boundaries for several miles into the lake.

15. A flow of one mile in the lake is of greater purifying power than a like flow in a stream because of (a) the time required; (b) dilution. It is of lesser power because of (a) the less saprophytic bacterial count; (b) less oxygen absorption. Weighing both equations, one mile is more

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efficient in the lake, but a forty-mile requirement of river flow is not equaled by a one-mile lake flow.

16. Massive amounts of sewage containing much floating material will sometimes hold together in a definite lake stream for twenty miles.

17. No town should place its water intakes within one mile of the sewer outfall of a town of 2,000 inhabitants. This distance should increase *pari passu* with the number of inhabitants using the discharging sewers, other things being equal.

18. Dumping should not be allowed in water less than sixty feet deep in Lake Michigan.

19. Government navigation regulations should keep ships a certain distance from water intakes at all times. They should specify holding provisions, with dumping control on all streams. They should specify zones from which ship drinking-water should not be taken in all bodies of fresh water.

20. Properly controlled, Lake Michigan water will always be safe for drinking purposes.

21. Under present conditions no town is justified in using Lake Michigan water from a point nearer shore than one mile.

22. Large cities emptying their raw sewage into the lake should not take their water within ten miles of any sewer outfall.

23. What these States and cities bordering on Lake Michigan are trying to do should be done by the national government for the chain of lakes.

From Evanston to Waukegan, a distance of twenty-four miles, there is a group of fifteen towns having a combined population of 60,000. With the exception of Waukegan the trade wastes from all of them are negligible, yet the water for a distance of two to four miles from shore is polluted by sewage to a degree that it periodically causes typhoid fever in spite of a large use of boiled and spring water.

It has been proven that it is not feasible to use a fresh water lake as a place for the dilution of sewage unless the volume of water is very large and the site of the nearest intake is miles away from the sewer outfalls, the number of miles to be determined by the volume of the sewage.

The principles and processes of purification by dilution are as follows:

1—When the organic content of the water falls below certain percentages bacterial life does not multiply nor is it long supported. This is true of the colon group and of enteritides sporogenes.

2—Sedimentation.

3—The percentage of suspended and dissolved oxygen to organic matter becomes high enough to favor fermentations rather than putrefactions.

4—Exposure to the sun's rays and to air.

Towns ideally situated for the use of the dilution method are those located on flowing streams near the point where these streams empty into salt water but above the reach of the tide.

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PRIVY VAULTS.

Where there are sewers, every house should be connected with them. In cheap houses, yard privies with hopper closets are allowable, and they are inexpensive. None of the anti-freezing yard closets work satisfactorily in unheated houses in the Chicago climate. If there is no sewer system in the adjacent street, a yard privy vault becomes a necessity.

Administration should abolish all vaults in the sewered parts of town. There is law enough; it is a question of administration. The law should provide that no yard privy should be built without a permit. A prerequisite for a permit should be a proper location and a proper type of construction. The cost of the permit should include as a first cost a charge for a preliminary inspection service. The permit should require yearly renewal. The renewal fee should include the cost of one cleaning a year. The fee should, therefore, be on the basis of seats. If an additional cleaning is required notice should be served, the assessment should be collected and then the service should be done by the city. The vault should be below the ground, in order that flies may not have access to it. The vault should be impervious:

1—It prevents rapid filling by seep water.

2—It prevents soil pollution as soil moisture lessens.

3—It aids liquefaction and mineralization through septic action, thus decreasing the volume and also facilitating removal.

Except for the feces bucket, the privy should conform to the type advocated by the Public Health and Marine Hospital Service: (Public Health Report, November 11th, 1910; by Lumsden, Roberts and Stiles.) Privies on dairy farms should conform to this type, including the bucket.

The contents of yard privies is technically called night-soil. It should be removed during the day time. The vault should be emptied by a pump into an impervious wagon. The wagon should be so constructed that it can be flushed into a live sewer. Plenty of water should be used to flush out both the wagon and the sewer. With proper care these emptying processes can be conducted without creating a nuisance. The following precautions are suggested:

1—Air vents from the wagons should pass through a charcoal fire.

2—A strongly odorous deodorizer should be used on the hands and clothes of the workers and on the suction nozzle of the pump.

If much ashes have been thrown into the privy vault it will not pump out. Therefore, the throwing of ashes into the vault should be made a punishable offense.

A privy vault which has a pervious wall and which is infrequently cleaned will become filled with desiccated feces unless it is located in a soil filled with soil water. Many such vaults, say thirty per cent of them,

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will not pump out. If water, or better still, water containing crude sulphuric acid, be added to them and the mixture thoroughly stirred after standing a few hours, the percentage of unpumpable vaults can be reduced to ten per cent of the whole.

To empty a vault by pitting requires more time and cannot be made inoffensive as the pitting barrels are open while they are being filled; or if the wagon method is used, the wagon must be open while loading and it cannot be made inoffensive when closed. Pitting barrels should be used where the pump cannot be used.

The charge for pumping should not exceed ten cents a cubic foot; the charge for pitting should not exceed fifteen cents a cubic foot. It should be done by the municipality for half these figures. The cubic content of the vaults should be a part of the Health Department record.

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STABLE MANURE.

Any large animal in a city is a potential nuisance; therefore horses, cows, sheep and goats should never be allowed in a city except by permit. It can be assumed that any business which is conducted under a permit receives a special privilege from the city and should, therefore, pay for that advantage. Thus, if a license is issued to keep a horse in a given place it can be assumed that in order to keep that horse from becoming a nuisance special effort on the part of the community is required. Whenever a man puts the community to an extra amount of trouble he should bear the cost in whole or in considerable part.

The license to keep a large animal in a city should specify requirements for sanitation as a prerequisite. These specifications should be on a sliding scale. The requirements for a part of town where three hundred people live on an acre should be greater than those for districts in which the average population per acre does not exceed five. The city ordinance reads as follows with reference to space required:

"No person or corporation shall keep at any place or upon any premises within the city not connected with or a part of a duly licensed slaughter house any cattle or swine, unless there be provided for each head of cattle at least one thousand square feet and for each swine one hundred square feet of outdoor space; and such cattle and swine shall be so kept as not to create a nuisance."

Large animals become a nuisance from noise, odors and flies. The odors and the flies result from neglect of the manure. Stable floors should be impervious. The bedding should be changed frequently enough to prevent it from becoming offensive.

The main difficulty will be caring for the manure, which must be kept in boxes. A prime necessity is that it shall not be allowed to accumulate or to lie on the ground. The boxes must either be below ground or if above ground they must be fly proof. These details, however, are of small moment as compared with the necessity for prompt removal, which must be at intervals of six days or less. It must never exceed the period required for the incubation of fly eggs. Manure is a moderately good feeding place for flies although they prefer feeding on garbage and other things. It is, however, a superb *breeding* place for them. The city laws should require a proper manure box and its proper keeping. The manure should be emptied preferably by the city. This should be cared for by a license fee of so much per horse per year, or else by a manure removal fee on the same basis. If this is not done manure removers should be licensed. When they empty a box they should leave a note to that effect with the stable keeper.

Stable manure varies greatly in value. When ploughed into the soil it is worth five dollars a ton in New Jersey, according to Lane. In

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Manitoba it is held that it harms growing crops and is without fertilizer value. In the prairie districts west and northwest of Chicago it is probably worth from one to two dollars a ton. In the sandy lands of the Michigan and Indiana fruit and vegetable districts, which contribute to our markets, it is worth over two dollars a ton.

But farmers are anxious to haul and to spread it at certain seasons of the year and will not handle it at others. Therefore it must accumulate at certain seasons. The question is, shall it accumulate in the boxes and stables or shall it accumulate in fields in the country or town? If the city is not to haul it away it should be moved by contractors financially able to pay shipping charges, cost of care and storage until the season arrives when the farmer wants it. The present charges of twenty to forty-five cents a horse, per month, for manure collection, of fifteen to sixty cents a ton for railroad haul and of five to twenty dollars a car for manure at the country track-side afford a profit which warrants better service than is now given even under the most uneconomic and inefficient conditions prevailing.

The service must be put upon a basis of efficiency. This will require a reconsideration of the law as it now stands by reason of the Illinois Supreme Court decision in the Landberg case. There is a possibility that the court can be persuaded to reverse itself as the opinion in that case was upon the facts and expert opinion on the facts. The court can easily be shown that the facts are not as interpreted.

The manure should be removed from the boxes at frequent and regular intervals. It should be loaded and taken from the city promptly. During the months when the farmer is too busy to handle it, it should be piled up in the country at places where it will not become a nuisance and where there is the largest demand when the farmer is less busy. The present charge for hauling manure is twenty-five cents a month, per horse. A horse produces six tons of stable manure a year. The contractor therefore gets fifty cents a ton for hauling and he pays the railroad an average of twenty cents a ton. He sells it to the farmer at an average of forty cents a ton. He therefore gets ninety cents a ton from which he pays the railroad twenty cents and keeps seventy cents to pay him for his wagon haul, car loading and administration expense. About the only one of these prices that is at all fixed is the horse charge. The other figures are somewhere near an average.

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THE CONTROL OF CONTAGION.

The control of contagion was "by rule of thumb" until the discovery of bacteria. Hence there arose such measures as quarantine. This was based upon the idea that a forty-day isolation of the patient furnished protection to the community. In the absence of all accurate information some hard and fast procedures represented the only logical course of action. In the earlier days of quarantine for yellow fever the only logical practice was to prevent commerce and travel between infected parts and parts capable of infection from the opening of the yellow fever season until its close. As means of communication multiplied and the demands of commerce increased some modification was logical. In the meantime there was a decreasing estimate of the danger from fomites and the discovery that there was something necessary for the spread of yellow fever which evolved in a certain number of days. Therefore, time quarantine was substituted for prohibition quarantine. This is becoming still more liberal in the light of the discoveries relative to the mosquito.

A few years ago there was a forty-day quarantine on diphtheria. This was reduced to a thirty-day quarantine. Now this has been changed and termination of diphtheria is now by the culture method. This means that a large percentage of the people who are reported as having diphtheria are released from quarantine in one week, the cultures being negative; a considerable number are released in two weeks; a few are kept for six or eight weeks.

The quarantine period on scarlet fever mounted from four or six to seven or eight weeks. In spite of this there was about two per cent return cases. The tendency now is to increase the length of isolation indefinitely on those cases having suppurations, nose discharges or "boggy" tonsils, and to decrease the time required for other cases.

It was thought that the discovery of the bacterial cause of diseases would end all uncertainty, but it has not done so. In some particulars we are as much at sea as we ever were. The first disposition was to regard water into which the typhoid bacillus had gone as permanently infected; to consider tubercle bacilli placed on surfaces as remaining there permanently; to believe one bacillus entering the human body enough to cause disease, etc.

Some of the old problems have been solved; on some of them information is absolute. New ones have arisen, but some of these are in a fair way of being settled, while some of them are very baffling. In the main they differ from the problems of bacteriology. They introduce into this science the science of probabilities, and the laws of averages, and problems in which these are introduced are difficult of solution. Such questions are:

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1—What is the rate of death of different pathogenic bacteria in drinking waters of different constitutions and different temperatures?

2—What is the rate of death of different pathogenic bacteria in air with different moisture and dust content?

3—What is the rate of death of different pathogenic bacteria in soils with differing amounts of organic matter, moisture and air?

4—What is the rate of death of different pathogenic bacteria as the result of drying and the action of sunlight?

5—What is the difference in the pathogenesis of pathogenic bacteria under the influence of sunlight, drying, air, water, soil, dust and temperature?

6—What number of different bacteria standardized as to virulence is necessary to cause infection when the bacteria find entrance to the human body through (*a*) skin wounds; (*b*) air channels; (*c*) food channels; (*d*) other channels?

7—What is the difference in the susceptibility of individuals as influenced by inheritance, experience, age and temporary variations?

A great deal of valuable work has been done on some of these questions. One cannot read "Sources and Modes of Infection," by Chapin, without being convinced of the material advance in accuracy of opinions and the efficacy of methods through the application of quantitative methods to the bacteriology of infection and the checking of the bacteriology of the subject by the application of the principles of epidemiology other than bacteriology.

It is difficult and often impossible to repeat in the animal subject the conditions in the human subject. The human subject is not under control and many unknown factors enter into his life. The feeding experiments on groups of men, such as have been done by Wiley, most conscientiously controlled, still leave enough uncontrolled to make deductions from them probabilities rather than mathematical conclusions. In applying the quantitative method we must be careful not to draw conclusions from partial data.

Let us say that it has been proven that tubercle bacilli in droplets are not often air borne for more than twenty feet; that saliva aside from mucus does not usually transfer tubercle bacilli twenty feet; that tubercle bacilli die rather promptly when exposed to the air; that but few bacteria taken into the air passages get to the alveoli. These things being proven, it is not proven that tuberculosis in the human subject is not air borne. The man who gets tubercular infection gets it say once in a life time. During a life of seventy years a man will breathe a great deal of air. He will breathe seven hundred million times. There is nothing in the experiments to prove that in some one of those seven hundred million inspirations he will not take in enough virulent tubercle bacilli to infect him even though every statement relative to the short

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duration of virulence in the average air-borne tubercle bacillus is true. The same thing is true of pneumonia and still other diseases.

When a relation was established between pollution of water and typhoid fever it was thought that a single examination of the water would settle whether or not it was causing the typhoid existing in the community. Not infrequently the water was examined and a negative finding left the community more unsettled than ever. No doubt these examinations gave the facts as they existed at the time the examination was made, and yet within twenty-four hours the wind may have shifted and conditions might otherwise have changed so that an examination of the water would have given results directly contradictory to the first results. Conclusions drawn from quantitative data must take into consideration all of these quantitative features or enough of them to form a basis for a proper weighing of the laws of chance, the science of probabilities.

HEALTHGRAMS.

From *The Bulletin.*

Typhoid to prevent costs a few cents, to cure costs many dollars.

* * *

Most farm wells are sinks of iniquity. (A hint to vacationers.)

* * *

All is not pure that sparkles—sparkling water may be be loaded with typhoid germs.

* * *

The typhoid chain of F's:

Filth..... } Fingers } ...Food.....Fever
Flies }

* * *

Typhoid is most prevalent in the late summer and early fall days—so are flies. Get the connection?

* * *

At least be as careful about what you eat and drink at country places as you are at home. Our advice is to be doubly careful.

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CONTROL OF INFECTION IN SCHOOLS.

Schools are excellent spreading places for infection. The number of cases of infectious diseases always decreases when the schools close for the summer. A part of this dropping off is due to the warm weather. The number of children who get together on the streets constitutes a smaller unit than the school unit. The contact within the street unit is not as close as it is in the school unit; therefore the school is a means of spreading contagion. At the same time the school room is the only place available for the inspection of school children.

When the inspection of school children is close enough to watch contacts efficiently then the schools become foci for clearing contagion and not for spreading it. In times of epidemic such inspection becomes closer and more adequate and in consequence it is now recognized that the proper policy in an epidemic is not to close the schools but to make the school inspection closer and more thorough. This holds true of smallpox, scarlet fever and diphtheria. In controlling measles, health departments in large cities are helpless. Where measles is epidemic it is thought that closing the schools is advantageous in the earlier stages of the epidemic. In the beginning of an epidemic the cases come in groups. If the schools are closed while the cases are still coming in groups some advantage is had. Closing at a later period has no advantages.

School inspection is for three purposes: First, the discovery of infection; second, the discovery of mildly communicable conditions; third, physical examination. When the school is assembled the teacher should separate from the balance of the room those who have been absent for two or more days, and those who appear sick. These two groups should be kept separate from the other students until the school doctor has examined them. Children sent home from school must be subsequently visited by the school doctor or the school nurse, as the family, thinking the illness of small moment, will probably neglect the necessary quarantine provisions.

The minor communicable conditions are lice, communicable skin disease and mildly infected wounds, burns and abrasions. It does no good to exclude children with any of these conditions from school as they would probably be kept out indefinitely.

Physical examinations are probably the most important part of the school examination though not now so regarded. The physical examination should show the weight and height of the child as well as the age; the condition of the teeth, pharynx, nose, eyes; nourishment, physical development, anemia. The teeth should be examined by a dentist. The physical condition should be reported in triplicate—one copy to the parent, one to the teacher and one to the health department.

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The school doctor, the school teacher, and the school nurse must concentrate their efforts to get the physical defects remedied. Those families which can afford a private physician should be persuaded to go to him. Those who cannot must be persuaded to find relief in hospitals and dispensaries. These two institutions must be developed and stimulated. The private physician is a most important agency in controlling disease. In families employing a family physician public health is much better safeguarded than it is elsewhere. On the other hand the community cannot afford to have its poorer children grow up with their defects uncared for. Therefore the community is interested in the development of such a hospital and dispensary system as will be adequate to care for the ills of all those who cannot pay and where none of its equipment and resources for the worthy needy will be pre-empted by those of greater enterprise who are able to carry the load of their illnesses.

SCHOOLGRAMS.

From *The Bulletin.*

Let the first lesson be: How to keep well.

* * *

"Skidoo" from the boy or girl with "a little sore throat."

* * *

Keep that pencil out of your mouth—it may have scarlet fever, diphtheria or typhoid fever germs on it.

* * *

A "little sore throat" in one little child may cause a big lot of trouble for many other children. Many "little sore throats" are in reality diphtheria.

* * *

You'll be brighter, learn more and keep in better health if your teacher will keep the windows of the school room open. Bad air makes a sluggish brain.

* * *

Swapping gum, swapping apples and swapping candy are about the dirtiest things—and the most dangerous things—that a child can do. Don't be that dirty.

* * *

Wash the drinking cup thoroughly before putting it to your mouth. The child who used it just before you may have left the germs of disease on it. Wash the germs off.

* * *

"Do unto others as you would have others do unto you"—meaning: Don't carry disease germs to school and cause sickness and perhaps death among your playmates. If you have a contagious disease at home keep entirely away from all other children. Stay at home if you have a sore throat.

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METHODS OF CONTROLLING TYPHOID FEVER.

There should be no typhoid fever; therefore, a city's typhoid rate is a measure of the city's failure to control the factors which cause typhoid. This is not a measure of reprehensiblity, since the factors are more difficult of control in some cities than in others.

Adding the latent typhoid, masked typhoid and carrier cases to each group, there is probably more country than city typhoid.

The factors which make for typhoid are: 1. Water; 2. milk; 3. carriers—sick and well; 4. flies; 5. ice; 6. oysters; 7. vegetables.

The first step in protection is to discover the cases; therefore typhoid should be reportable. The method employed in Chicago is as follows:

The case is reported. In order to facilitate diagnosis the laboratory makes Widal examinations free of charge. They repeatedly warn physicians that Widal examinations are of limited value; a positive finding is nearly proof positive of the disease; a negative finding is of little value.

The case having been reported, it is visited by a representative of the Health Department, who advises the family how to disinfect the stools and urine, shows them what should be done to rid the house of flies; instructs the nurses as to the spread of the disease through unwashed hands, etc.; establishes a back-door quarantine and gets all information available as to possible sources of infection. The report is made on a blank which calls for specific information as to vacations, regular and occasional water supply, regular and occasional milk supply, ice, oysters, vegetables, swimming practices, etc.

By back-door quarantine is meant a quarantine which allows visitors to come and go at the convenience of the household but which places restrictions on purveyors of milk and other foods which are eaten raw. A card of warning and advice is posted on the door used for the bringing in of food.

This information is filed in the contagious disease cabinet in the Health Department. The method of keeping this record and of subsequent filing of certain data is elsewhere described.

A monthly spot map is made according to the plan described in the section on contagious diseases.

As Chicago gets its water supply from several different cribs, tabulations are made from time to time to determine whether or not any given crib is supplying a district having an unusually large number of cases of typhoid. After a given water supply has been charged with its quota of typhoid it is next in order to apply factors for total population, congestion of population, condition of milk supply, number of flies, and sanitary condition of homes. After these calculations have been made, we can arrive at an opinion as to the different water supplies.

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We are of the opinion that only a small part of Chicago's typhoid fever is water borne.

A "ward factor" for typhoid fever is made by dividing the total number of cases of typhoid fever by the total population of the city and multiplying by the total population of the ward. The factors for the different wards are:

1st 3	13th 6	25th 10
2nd 4	14th 5	26th 7
3rd 4	15th 6	27th 11
4th 5	16th 6	28th 7
5th 5	17th 7	29th 8
6th 7	18th 3	30th 5
7th 9	19th 6	31st 7
8th 6	20th 6	32nd 7
9th 4	21st 4	33rd 7
10th 5	22nd 5	34th 6
11th 6	23rd 4	35th 5
12th 9	24th 5	

Every case of typhoid fever is charged against the dealer furnishing the milk.

A "normal" is established in the following way. The year is divided into high typhoid months (July, August, September and October) and low typhoid months—the remaining eight. We have a high and a low "can factor." The "can factor" is found by dividing the average weekly number of cases of typhoid by the weekly number of cans of milk received. This factor, multiplied by the number of cans handled by a given dealer, gives his typhoid "normal."

For instance: If, during a week in August a dealer handling a thousand cans of milk a day has one case of typhoid on his routes each week he is up to his normal. We then assume that vacations, water, oysters, flies, vegetables and contacts are responsible and that his milk supply is not a contributing factor. If he has more than this, we inquire into his methods and his supply.

These are the only typhoid records which we keep, except the permanent house records which are described in the section on contagious diseases.

In our opinion the danger of household spread of typhoid fever is not very great. This opinion is based upon a few observations of neighborhood epidemics, and a somewhat larger number of household epidemics. We have seen a few epidemics of typhoid caused by milk where some cases have followed three weeks after the use of the typhoid-infected milk has been discontinued.

We will say that we are dealing with an outbreak of typhoid fever caused by infected milk; the source is discovered and the dealer is ordered to discontinue selling his milk on November 12th. The milk on hand will all be used up by November 14th. Persons are liable to get sick up to November 24th to 27th. Additional time, a week or ten days, is required for the establishment of a diagnosis, bringing the date to December 1st to 7th. Between December 7th and January 18th there is

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a period in which household contacts can develop the disease. From any cases which develop during this period, after a small correction for the usual incidence of the disease, you can get a figure showing the household contact infection. This is probably around three to five per cent of the total infections in our community. This percentage, however, is not even in all parts of the same community.

A single typhoid bacillus will not cause typhoid fever. If it did, mankind would have been wiped out by typhoid ages ago. A great degree of pollution is required. Gross carelessness is necessary for finger infections. Probably in those parts of town where there is a high standard of household and hand cleanliness there is no household infection. In those parts of town where the living quarters are very cramped, and where the wife has to act as nurse and preparer of food, and proper cleaning is impossible, the ratio of household infection is larger. In searching for the causes of household infection it is usually necessary to remain at the house for a period of time in order to discover the intermittent acts of gross carelessness which are responsible. Many people spread contagion—not because they want to or because they do not know better or do not care—but because in their squalid home quarters they cannot help themselves, nor can they get better quarters.

The remedy for household infection is simple. All cases should be hospitalized unless they can be shown to be: 1. Properly nursed; 2. properly screened; 3. in homes not unduly crowded; 4. in homes properly cleaned.

This means that the interests of the community demand that about ten per cent of the typhoid fever should be hospitalized. This ten per cent should include, in the order named, the cases which are the poorest nursed, the poorest housed, the poorest screened, and in the most congested neighborhoods. This would include the three to five per cent in which infection of others is certain, and the five to seven per cent in which the hazards are unwarrantably great.

Probably more than ten per cent of the typhoid is now hospitalized, but a large percentage of those who go to hospitals could be safely left at home and a large percentage of those who stay at home should be hospitalized.

The death rate from typhoid in hospitals is less than it is in homes. Especially is this true when the homes are poor; therefore, the man who is hospitalized has his chance of recovery increased. The next best thing to hospitalization is educational nursing, and after that comes relief nursing. In placing educational nursing above relief nursing, I have this in mind: A nurse on a single case will make that case quite safe; an educational nurse visiting twenty cases will make ten of them safe.

For ridding premises of flies we recommend screens, "swatters," and fly paper.

As a disinfectant for the feces and urine we recommend chloride of lime.

For the hands we advise alcohol, followed by a solution of bichlorid of mercury, 1 to 1,000, or lysol.

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CHICAGO WATER.

The Chicago water is taken from cribs which are, with two exceptions, two miles from shore. Of the latter, one is four miles from shore, the other is 3,000 feet. The water from the 3,000-foot crib is filtered. The two-mile cribs are in water which is 25 feet deep.

There are no fixed currents in Lake Michigan. The superficial currents run in the direction of the wind, and their rapidity is determined by the force of the wind. The waves are also the result of wind action. In times of great storms the waves agitate the water to a depth of fifty feet. However, it is rare that wave action extends to so great a depth.

The lake bottom is covered by a thick layer of sand. The dumping of excavation material in certain areas has given a clay bottom. The average analysis of unpolluted Lake Michigan water in parts per million is:

Free ammonia	.005
Albuminoid ammonia	.06
Nitrates	0
Nitrites	0
Chlorine	3.5
Oxygen consumed	1.20
Color	0
Odor	0
Turbidity	10
Gelatine count 20° C.	160
Gelatine count 37° C.	1
Litmus Lactose Agar count 37° C.	0
Colon bacilli	0

It is a clear water, rather low in free and combined ammonia, low in chlorine, low in organic impurities, and having a low bacterial content.

There are times when it becomes turbid. This is the result of storm action. If the waves are deep enough to stir up the bottom and the suspended soil does not settle out before it reaches the intake the water is turbid. Some storms are violent enough to stir up the bottom around the intakes. Generally the muddiness is due to waves nearer shore and currents carrying the muddy water to the cribs.

As clay settles out much more slowly than sand, dumping on the old dumping ground four miles off shore caused the turbidity of the neighboring water to persist. Now that this dumping ground has been abolished, the turbidity should be less, especially after the clay now there has been covered with sand. Turbid water is most

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frequent in the late spring and in the fall. In the winter and early fall the ice limits wave action. In the summer violent persisting winds are infrequent.

The safety of drinking water should be determined as the result of repeated examinations of water as it is delivered at the tap. The methods of analysis followed should be the standard methods adopted by the laboratory section of the American Public Health Association.

Water as it flows from the tap may differ materially from the water as it flows into the cribs. During the time it is in the mains, typhoid and other pathogenic bacteria will disappear in many instances. On the other hand, the water may be contaminated while inside the pipes. Tanks on houses frequently are found to be very foul. The bacteria in such tanks are saprophytic. The water in dead ends of mains is frequently turbid and occasionally contaminated. In periods of abnormally low pressure in water mains there is an occasional back flow of sewage into water mains and the water is polluted thereby.

The rapid destruction of the typhoid bacillus in stored and other waters saves the consumer from ill effects from these sources of contamination. The water should be frequently examined; a single examination may be misleading. At the time of an examination the wind may have been blowing the sewage away from the crib, or all of the colon group originally in the water may have died off before it reached the laboratory. On the other hand, the turbidity may have resulted from a recent storm. When colon groups are found, tests for these bacilli with an agglutinating serum should be made from time to time.

HEALTHGRAMS.

From *The Bulletin*.

When you must drink, drink Adam's ale. Lake Michigan is full of it.

* * *

Tea and coffee are stimulants, not foods; the same is true of alcoholic drinks.

* * *

The bubbling cup on the street fountain beats the sparkling glass in the bar-room.

* * *

Health is not put up in bottles; neither can it be bought at the corner drug store.

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PNEUMONIA.

Pneumonia ranks all diseases in the number of deaths which it causes, but in point of importance it holds second position. If it causes one-seventh of all the deaths and ten times as many people have it as die from it, the figures apparently indicate that everyone has it some time during his life. While many people have it more than once and some more than twice, many people escape it entirely, so that the facts do not invalidate the figures.

It is much the most widely spread disease in this climate. It is conservative to conclude that somewhere between the cradle and the grave more than fifty per cent of the people in the Chicago climate have the disease. Not over one-eighth of the people have clinical tuberculosis during their lives. Pneumonia is, therefore, four times as widely spread as consumption.

It ranks below consumption in the economic loss which it entails, since the resultant illness and disability are enough shorter than in the case of consumption to more than compensate for the smaller number of cases of the latter disease. It is less important than consumption in that a smaller percentage of its subjects are in the years of maximum utility. Therefore, from the sociologic standpoint pneumonia is far outranked by consumption; from the epidemiologic and medical standpoint it far outranks consumption.

The tubercle bacillus is practically a pure parasite on the animal kingdom. It is slowly modified by its host, and the host never becomes wholly habituated to it. The persistence of life in bacilli-encapsuled lesions is not an habituation. The nearest approach to this condition is in the chronic, slowly progressing lesions sometimes found in persons living in arid countries and in lesions occasionally found in people who, through tuberculin, have developed a toxin immunity. The bacillus does not live a tolerated existence on mucous, intestinal or skin surfaces as do the pneumococcus, influenza bacillus and meningococcus. The cases which are excreting bacilli are practically all clinical cases.

The problem of pneumonia from the medical standpoint is difficult. In a city like Chicago the disease is endemic at all seasons of the year.

In a very rough way the number of foci from clinical cases on a given day may be obtained by multiplying the number of deaths for that day by ten, as indicating the morbidity rate of the disease, and by ten as representing the average day duration of the disease. Let us say that this would give 2,000 clinical foci for a March day and 500 for an August day. These figures should be corrected on a bacteriologic basis. In a considerable number of the deaths reported

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as pneumonia, the pneumonia is but the termination condition, while other factors are largely responsible for the deaths. These cases and the pneumonias of infancy are of lesser consequence in the spread of the disease than are the pneumococcus pneumonias of previously well adults.

While the number of clinical foci of pneumonia on a given day, say 2,000, is small as compared with the 10,000 of consumption, the number of foci of pneumonia is very much greater than the foci of consumption because of the large number of pneumonia carriers. The number of carriers is very much greater than the number of cases.

The human body readily adapts itself to the pneumococcus, or vice versa. At any rate the pneumococcus readily locates and lives on the mucous membranes of the nose, mouth, pharynx, and around the teeth. The indications are that it propagates there.

In many of the clinical cases, infection is with a bacillus which has just been living on a mucous surface. In these cases, at least, variation in the host is a larger factor in infection than is the incidence of contact with the bacillus.

Pneumonia is an endemic disease; in small communities it is epidemic. Occasionally its epidemiologic features are as pronounced as those of smallpox. The number of carriers is very large. A carrier is more largely responsible for its spread than is a case.

It is needless to say that I believe in isolation as the means of controlling contagion in nearly all diseases. Infrequent diseases, such as cholera and plague, are easily controlled by isolation. Smallpox is in the same category. In my judgment the time has come to apply the same methods of isolation to diphtheria. We can isolate all cases and proven carriers without unduly interfering with the community interests. Such a policy would drive the number requiring isolation to a small figure in a few years. The total isolation of all consumptives will probably be too great a burden for society for a few years to come. Ten years from now Chicago should have its cases so reduced that a comprehensive isolation would not entail too much of a burden on society. But isolation of pneumonia will not be feasible for many years to come.

To isolate the cases of pneumonia would do but little good since the most of it is spread by carriers, and to isolate all of the carriers would deprive society of too many of its bread winners.

The pneumonia "curve" indicates the importance of housing in the causation of pneumonia. In the Chicago climate there is a level which is maintained quite uniformly from June to October. In November there commences an even rise, which continues through December, January and February and reaches its maximum in March. There is a slight subsidence during April and a sharper fall in May. This would indicate that as the colder weather drives the people

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indoors during November, pneumonia increases. The close housing increases during December and still further in January. It has become a habit in February from which escape begins in March and rapidly increases in April. But it has been found that the number of foci which have been developed always causes the apex of the epidemic or endemic to lag behind the apex of the causes, just as the ending of the epidemic lags a good ways behind the ending of the principal causative factors. When we come to study pneumonia in its relation to climate, the same conclusions are justified. In countries where the twelve months are all spent out of doors there is no pneumonia "month-curve" and but little pneumonia.

My suggestions as to pneumonia are these:

1. That research work be done to discover a simple, easily applied method of differentiating pneumococci from other bacteria in smears. The present laboratory reports on the presence or absence of pneumococci in smears or cultures is quite inaccurate because of the inaccuracy of conclusions drawn from the present methods by which they are determined.

2. That research work be done to determine the life history of the pneumococcus in the upper air passages of carrier cases.

3. That research work be done to determine methods of "clearing" the upper air passages of carriers.

4. That pneumonia be made a reportable disease:

5. That the secretions of pneumonia cases be destroyed.

6. That the policy be inaugurated of advising all carriers discovered to destroy their nose and throat secretions and to keep their mouths clean.

7. That the public be educated as to the necessity for cleanness of mouth, nose and teeth.

8. That pneumonia be treated by the open air method.

9. That the public be educated to the fact that crowds in warm places should always be avoided.

10. That warm housing spreads pneumonia.

11. That bad ventilation causes pneumonia by (a) spreading infection, (b) increasing susceptibility to infection.

12. That over-eating and over-drinking cause pneumococci to infect.

13. That spitting spreads pneumonia.

A policy based on the above suggestions, pursued for several years, would reduce the number of cases and carriers to a point where the community could isolate and clear them without entailing too great a burden.

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"COLDS."

Colds should be treated as contagious. The border line between colds, bronchitis, penumonia and bacterial blood infections of certain kinds cannot be drawn with certainty. The harm done by a cold, directly and indirectly, makes it a contagious disease of major sanitary importance. The final solution of the problem of the control of colds will mean isolation and segregation.

It would seem reasonable to conclude that the infection may be due to any one of several organisms; therefore a specific vaccination seems scarcely feasible.

The alternative is isolation, but the number of people who would have to be segregated, the percentage of the attacks which are mild in character, and the unpreparedness of public opinion make isolation for colds out of the question for the present. The remedies recommended now are as follows:

1—That all cases of cold in which there is fever or general aching be put to bed.

2—That the sputum and nose secretion of all persons having colds be sterilized by heat, burning or boiling.

3—That all persons with colds keep away from warm rooms in which people congregate.

4—That all shun close contact with people having colds.

5—That dust in the air, both inside and outside, be reduced to a minimum.

Colds can be caught in three ways:

1—By infection with germs present in the mouth or nose; 2—by infection by intimate contact with some one having a cold; 3—by infection through dust, air borne.

The best illustration of what may be termed auto-infection is pneumonia but a good illustration is a common cold. Bacteria are resting on the nasal or pharyngeal mucosa. They do not infect. The man overeats and as a result of this he becomes infected, or, his body being warm his feet are chilled or a small zone of his back is cooled unduly, his physical mechanism is disturbed beyond his capacity for the maintenance of reaction, and an infection occurs.

The remedy for this condition is: The capacity of the vasomotor nerves of the skin should be so stimulated that reaction is customarily sufficient to care for chilling and wetting. This training comes from subjecting the body from childhood to cold air baths or cold water baths; from having all young or vigorous persons wear light clothing to accustom the skin surfaces to care for increased conductivity from wetting, and increased radiation from evaporation or increased radiation from cold air

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by supplying more heat to the surface as needed; from having all bodies meet the increased need of heat by the increased manufacture of heat, and not to disturb the body equilibrium by over-distending the stomach and crowding the diaphragm, placing everything within the abdomen under tension.

People who are rightly trained can come in contact with people having colds without being infected; but given the needed exposure at the time of susceptibility, infection occurs.

Even ordinarily informed people and moderately good observers are noticing that colds are catching.

The great majority of organisms which fall on the street surface die in a short time—but some survive. If one thousand men march along a dusty country road but few will become infected with colds. If one thousand march along a city street on a dusty day they will breathe less dust but a much larger number will become infected. The dust is more infectious at certain seasons than at others. When the temperature falls lower than ten above zero and all the moisture on the street surface is congealed, the amount of dust is as great or greater than at any other season but there are no colds from this dust. It is not infectious. The colds of cold weather are due to the warm rooms in which people spend so much of their time. In cold weather people spend a larger part of their time indoors than at any other season. In cold weather the effort to keep the cold air out means that the air which is breathed is fouler than it is in warm weather. Consumption, colds and pneumonia are house diseases and men during December, January, February and March are house animals.

HEALTHGRAMS.

From *The Bulletin.*

Colds are "catching."

* * *

"Dope" for colds is "meat" for the doctor.

* * *

Dry-dusting moves dust; it doesn't remove it.

* * *

Coddle yourself and you flirt with pneumonia.

* * *

Breathe freely and fully; the more you expand your chest the less you will contract colds.

* * *

The man with a chest protector can shy no stones at the woman with the lace hose and peek-a-boo waist.

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DIPHTHERIA.

Early use of antitoxin in the treatment of diphtheria is very desirable. The globulins contained therein are entirely harmless. To find a person with an idiosyncrasy to horse serum is rare. It is therefore safe to use antitoxin without much certainty of diagnosis. There are a few cases which apparently are not benefited by antitoxin; but, generally speaking, the intoxication from diphtheria toxin yields rapidly to antitoxin.

The death rate among those who are given antitoxin within the first three days of the illness is almost nothing. The death rate mounts higher among those who do not get antitoxin until the fourth day, still higher for the fifth day, and very much higher on each succeeding day. Not only that, but the dosage of antitoxin required mounts by geometrical progression with the passing of the days.

Whenever a case seems to be one of diphtheria from the clinical appearance, the Health Department advises that a dose of antitoxin be given at once; that this dose be determined by the day of the disease; the location of the membrane and the apparent degree of intoxication of the patient; that the case then be reported and a culture made.

We recommend that the Chicago culture outfit be used for making the culture. The advantages of the Chicago outfit are:

First—Its cheapness.

Second—It can be carried in the pocket; therefore the doctor is liable to have an outfit on hand when he runs across a suspicious case.

Third—The inoculated box can be safely carried (and incubated) in the pocket; the time required in the incubator thus being reduced to five hours. Its disadvantage is that a certain number of boxes become infected with mould.

The disadvantages of waiting for a culture report before reporting a case, giving antitoxin, or making a diagnosis are: (a) Delays; always dangerous—but deadly in diphtheria; (b) uncertainty; cultures may be contaminated; they may be from parts of the throat where there are no diphtheria bacilli; they may be taken too soon after an antiseptic topical application, in consequence of which there may be no growth or a misleading growth.

In cultures incubated for more than six hours other bacteria may so overgrow as to cause the diphtheria bacilli to be missed.

A positive finding of diphtheria bacilli in a secretion is a better diagnostic sign than are the clinical symptoms, but a negative finding is of small value compared with the clinical symptoms.

For all of these reasons we advise use of antitoxin and preliminary reporting on the basis of the clinical findings.

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The diagnosis having been made, and the case reported, an inspector visits the case to determine:

First: The probable source of infection:

Second: The number of susceptible people in the household and the domestic arrangements which will best protect them:

Third: The school relations of the household:

Fourth: The source of the milk supply:

And also:

(a) To instruct the family how to prevent the spread of infection:

(b) To put up the warning cards on both front and rear doors:

(c) To put up the instruction card within the rooms used by the patient and the nurse:

(d) To give immunizing doses of antitoxin to the contacts.

We think that the only effective way to control diphtheria in a large city is by universal hospitalization of all cases and all carriers. On any other basis diphtheria in large cities in a climate similar to that of Chicago will always be endemic. The advisable course to follow is to inaugurate such a program during next summer. At that time the present rate of the disease will have decreased the number of susceptibles; the majority of the bacteria will have been modified by their human hosts of the previous winter, and there will be the natural summer decline. Due to the operation of these several causes it will be possible to bring the hospital capacity up to the reduced level of the number of cases and carriers.

On superficial consideration it would seem that such an equation as this would stand: As is the total number of foci of infection to the number controlled so is the result accomplished to the ideal; or, to put it more simply, if you have one hundred foci and control one-half of them, your results will be just one-half as good as though you had controlled all of them. This is not true. A complete control returns results which are not in proportion to the numerical relations of partial control, *e. g.*, one-half.

In the meanwhile, hospitalization should be just as complete as the state of public opinion will permit. All cases where the crowded condition of the home is such that proper isolation cannot be had and where the sanitation is bad should be hospitalized. Those who have come in contact with a case of diphtheria in the home should be immunized by 1,000 units of antitoxin. The quarantine should not be raised until two negative throat cultures have been obtained, not only from the cases but from the contacts also. It is not advisable to immunize the contacts unless cultures are to be taken. Antitoxin confers only a slight bacterial immunity; therefore the immunized contacts are liable to become carriers, and, being free from illness, are capable of running abroad and spreading the disease. As recognized cases of diphtheria they would do less harm, at least in many instances, because their range of activity would be restricted.

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We think that carriers are largely responsible for the spread of diphtheria, as they are not recognized sources of danger. It is difficult to make a family understand the community relation of a carrier. In Chicago carriers are excluded from school and quarantined at home under the provisions set forth on this card:

(SLIP HANDED TO FAMILY IN WHICH A DIPHTHERIA "CARRIER" IS ISOLATED.)

DEPARTMENT OF HEALTH---CITY OF CHICAGO

Instructions for Parents in Cases of Diphtheria Carriers

A microscopical examination of a culture from the throat of your child shows the presence of Diphtheria germs. The child may not feel sick, but Diphtheria germs are dangerous to anyone having them in the throat and to others as well.

For the safety of the child and other members of the family, you should have your doctor use something to destroy the germs now in the throat. DO NOT take the child to the doctor. Call the doctor in or see him yourself.

For the safety of the neighborhood, the Department of Health will require the child to remain in the house until the throat is free from germs.

Other persons living in the home can go in and out.

Neighbors and friends must be kept out of the house.

Cultures will be taken from the throat to tell when it is safe.

The milk man must take the usual precautions.

These rules must be obeyed until the warning card is taken down by the Department of Health.

Carriers are released after one negative culture has been obtained. They are not given antitoxin. If the tonsils are enlarged we advise their removal. A positive culture is seldom secured in the ordinary carrier case after a week's time has elapsed. Chronic carriers and carriers harboring diphtheria germs for a considerable time should have a thorough

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cleaning of the teeth, gums, tonsils, tongue, and all mouth and nose recesses, and enlarged tonsils and adenoids should be removed.

In our diphtheria hospital it has been the custom for some time to remove all tonsils which remain flabby subsequent to diphtheria. It appears that no antiseptic application to the pharynx will clear up the conditions. We advise thorough cleaning—not antiseptics.

Subsequent to cases of diphtheria our present practice is to clear by room disinfection, using the sheet method.

Nothing is growing more rapidly than the idea that the cases and contacts shall be cleared bacteriologically, that the room and its furniture shall be cleaned with soap and water, and that aerial disinfection with formalin or sulphur shall be discontinued. The little protection from the use of formalin is not equal to the protection which would be afforded by the same money spent on a more effective after-cleaning.

Diphtheria should be watched from the standpoint of household contacts, school contacts, and milk.

Every case of diphtheria should be charged against the milk dealer supplying milk to that house.

A "can factor" for diphtheria is obtained by dividing the number of cases of diphtheria during the previous week by the number of cans of milk received in the city. If the number of cans of a given dealer is multiplied by the "can factor" you get the diphtheria "normal" for him. If the number of his cases materially passes this number his supply should be investigated as well as his depot. In order to avoid repetition, we will say that the same method is employed for scarlet fever.

The "ward normal" is found as follows: The total number of cases of diphtheria in the city is multiplied by the ward population under 16 years of age, and divided by the total under-16 population of the city. In this way the "normal" for that ward for that week, month or year is determined. The same plan is employed for scarlet fever.

All cases of diphtheria are recorded on spot maps. A school record of cases of diphtheria is kept.

Having antitoxin for curing and for immunizing, having discovered the bacillus, knowing the relation of carrier cases to the spread of the disease, if communities generally would provide for hospitalization, diphtheria would cease to be endemic within three years and epidemics would come with decreasing frequency. The apparently insurmountable obstacle, the carrier, is generally quickly cleared, and with intelligent control, diphtheria should speedily come within the range of possible elimination.

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SMALLPOX.

There are two methods of controlling smallpox. Each is efficacious. The methods are hospitalization and vaccination.

In smaller places where every one is cognizant of his neighbor's affairs, vaccination may be the only measure needed. In a group of communities such as that called Chicago, hospitalization is a necessary adjunct; less necessary, however, than in cases of diphtheria and scarlet fever.

Hospitalization in the case of smallpox can easily be made complete. Every case should be removed to the hospital and held until the period of contagion is passed.

Suspicious cases should be vaccinated and removed to the hospital. After weighing the harm which is liable to come, this course seems wisest. A certain small percentage of the contacts—those unvaccinated who have been thrown into close contact with the case and who cannot otherwise be controlled—should be vaccinated and hospitalized. In case they are not already incubating the disease, the vaccination will develop in time to protect against infection occurring in the hospital. This policy, we are sure, is the proper policy in epidemics occurring since 1898. Should a more virulent strain of smallpox be introduced into this country, or should the present strain become more virulent, the factors in this latter policy should be weighed.

In smallpox it is possible that the importance of fomites as spreaders have been overestimated. It seems that air-borne contagion is somewhat more probable in smallpox than it is in diphtheria, but at that it is but a very limited menace. Some of the attention which has been bestowed upon this phase of the matter can be relaxed.

Probably smallpox hospitals never spread contagion except when an occasional unvaccinated person is allowed to enter, as happened in Chicago in September, 1903, when an unvaccinated milk driver carrying milk into the hospital became infected. No neighborhood infection or laundry infection has ever occurred in this hospital. Many years ago some unvaccinated nurses were attached to the hospital and became infected. Some years ago a professor in a medical school took several unvaccinated medical students into the hospital and they were infected. Since successful vaccination as a requisite for visitors has been more closely watched, there has been no smallpox among nurses or visitors. The neighborhood has always been the freest from smallpox of any in the city.

The city of Chicago pursues an unwise policy in maintaining a hospital equipment which is too expensive for the community incidence of the disease. Since 1903 the number of cases of smallpox has been so

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low as to make the daily per capita cost in the hospital higher than the highest rates in the most extravagant hotels. The more sensible plan to pursue is to have such pliability in smallpox hospital provision as will permit the equipment in time of security to be reduced to a skeleton inexpensive to maintain. Such a policy is in vogue in Washington, Detroit, St. Paul, and other cities. The total cost of maintenance of a smallpox hospital when empty should be less than $100 a month. The hospital in Chicago is empty for six months out of the twelve.

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VACCINATION.

Vaccination is our chief agent in controlling smallpox. Whatever idle dreamers may think to the contrary, this is the conclusion of every man who has had administrative experience in health work.

The experience of Cleveland, Ohio, in 1901, is in point. At that time a health officer tried another policy for a while. The result was a plague-infested city requiring the expenditure of much money and time to remedy the harm which had been done.

Babies should be vaccinated just so soon as they have a good grip on life. This age will vary under different circumstances. If the child is born in immediate contact with smallpox, it should be vaccinated as soon as it is cleaned; if smallpox is in the neighborhood but not within the house the child should be vaccinated within the first two months; in all instances the child should be vaccinated while being breast fed.

By vaccination is meant the production of a sore on the skin by infection with vaccinia. The act of scratching the arm is not vaccination; the act of rubbing in lymph is not vaccination; a sore due to pus infection is not vaccination. Vaccination is the securing of a result; the result is the presence of a pustule caused by the vaccinal infecting agent.

The only absolute test of a vaccination is the failure of subsequent efforts to vaccinate with potent lymph. In most instances reliable conclusions can be drawn from:—

1. The history: (*a*) Time between the inoculation and the development of the eruption; (*b*) appearance of the papule, vesicle, and pustule; (*c*) the clinical history.

2. The appearance of the scar.

Glycerinated vaccine should be used and but one area should be scarified; the area scarified should not be larger than the end of a lead pencil; the scarification should be shallow. Vaccination should be done on the arm. The percentage of infections in leg scarifications is so large as to condemn attempts to vaccinate on the leg.

For a woman to display an unvaccinated arm should cause the community to doubt her judgment and mental poise. At the very least her vanity dominates her judgment.

Attempts to repeat vaccination should be made every seven years. The period of protection varies greatly, probably averaging from fifteen to twenty years. Therefore to attempt re-vaccination every seven years keeps one well within the average limit of safety.

The number of people coming to our hospital with supposed vaccination scars more than twenty-five years old is fairly large; the number, however, is very much smaller than the number of those who have no

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scar of any sort. The above does not mean that every one with such a scar who has come in contact with smallpox has contracted the disease; thousands of similar contacts have escaped.

As for so-called "internal vaccination," nothing need be said. The facts and the logic which its advocates offer do not appeal to any except the "long hairs" and the "unwashed."

Erroneous conceptions of vaccination have arisen in two ways:

First: Much of the vaccine used has been impotent. Vaccine may be impotent originally or it may become impotent through heat or through age. Because lymph has been used, many people have concluded that they were vaccinated. When the scarified area has become infected with pus bacteria, sometimes physicians have been misled.

Second: The scarified area may have become infected. This may be the result of infection carried in the vaccine. It is usually, however, due to infection of the scarified area subsequent to the inoculation. When we remember that pus infections develop within two days of subcutaneous inoculation; that tetanus infections usually develop in five days, and practically always within ten days; and when we remember that pus and tetanus infections of vaccinated areas usually develop ten to thirty days subsequent to vaccination, it is clear that the great majority of such infections occur days and sometimes weeks subsequent to the scarification.

All persons coming in contact with a case of smallpox should be vaccinated, regardless of age, previous vaccinations, or the probable stage of incubation of smallpox in them.

Occasionally a man will not contract the disease from an intimate contact; and subsequently may contract it from a less intimate contact. Therefore those contacts in which it seems that the disease is imminent should be vaccinated. Vaccination has a five-day incubation period; smallpox has a twelve-day incubation period, therefore there is something like a week's time in which vaccination will be preventive in fifty per cent of the cases. It probably is ameliorating in all cases. Many persons coming in close contact with smallpox cannot be properly controlled except through hospitalization. For all of these reasons all intimate contacts should be vaccinated.

Smallpox is never spread through casual street contact. From our experience we are led to believe that a more intimate contact is necessary. The danger from street contact must impress us as slight, at least, when we remember the number of persons coming in contact in this way who fail to develop the disease.

Of our city-raised population nearly all have been vaccinated. There is but little susceptibility. On two occasions we have known of Pullman porters having smallpox caring for a car load of passengers for several thousand miles and yet infecting none of them.

Chicago has a large winter-floating, unskilled-labor population. The men who comprise this population are to be found mostly in the lodging houses. They are vaccinated, almost without exception. Occasionally a

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wanderer with smallpox will spend several days among these people, but we have never had a case develop among them.

Our naturalized foreigners, except the English, have all come from lands where vaccination was compulsory or have been vaccinated before getting into the country. There has been no smallpox among them during the last four years except a small epidemic (five cases) among the Poles in 1910. An emigrant having the disease spread it to four Polish children all under school age and all born in this country.

It is safe to say that ninety-five per cent of the school children have been successfully vaccinated in spite of some opposition. During the past four years no child of school age has had the disease. Where smallpox has occurred it has been almost exclusively among American men and women who were raised in the country. Most of the cases we have come to us from those States where the disease has been neglected and where it is more or less endemic.

After the transient cases have been eliminated, we have negroes, college students and the residents of what are called the better residence wards as the principal contributors to our smallpox situation.

HEALTHGRAMS.

From *The Bulletin.*

Smallpox is a disgrace—save your reputation and your face by vaccination.

• • •

If we procrastinate
And fail to vaccinate
The Smallpox
Will
Get
Us
Sure.

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CEREBRO-SPINAL MENINGITIS.

Cerebro-spinal meningitis is classed as a disease of major sanitary importance. Generally speaking, it does not cause a large number of deaths and is not highly contagious. It seems similar to penumonia in that it is usually endemic, the organism being present in the nose and throat of a large number of people who are well, the host factor being the larger factor in infection, and the disease occasionally becoming epidemic.

Like smallpox and poliomyelitis, the disease greatly agitates the community when it appears in an epidemic form. Those of us who know the enormously greater consequence of diseases which cause a much larger death rate and which the community does not become disturbed about, are prone to lose patience with the general inability to estimate values. Oftentimes we belittle the importance of these diseases. We should rather be thankful that the community is awake to these smaller things and hope that some day it may become awakened to the larger.

The methods to pursue in the control of cerebral-spinal meningitis are:

1—To make proper use of the serum.

2—To destroy all nose and throat secretions of the patients.

3—To isolate all patients.

4—To isolate and clean up carriers whenever found regardless of whether epidemic conditions prevail or not.

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MALARIA.

Malaria is of no consequence in Chicago either from the standpoint of morbidity or mortality—Anopheles are very abundant but they have not been infected in any considerable number for a quarter of a century. For the continuance of the disease it is necessary that there should be susceptible mosquitoes, susceptible people and a considerable number of infected individuals in order that there may be a continued infection of susceptibles. Infected mosquitoes tend to die after a short life. Infected men tend to spontaneous recovery or recovery after medical aid. Therefore, unless there is a considerable number of infected people to infect the mosquitoes and a considerable number of infected mosquitoes to infect the people the disease tends to disappear spontaneously.

At two periods during the last 25 years, there has been a moderate distribution of the disease in Chicago. One in the early nineties when large numbers of Southern negroes were in this vicinity digging the Drainage Canal, and in 1898 and 1899 just after the Cuban War. It is probable that every case recorded as having died in Chicago during the last ten years was a case of mistaken diagnosis. We would not accept it as a cause of death during 1910. The methods of controlling the disease are:

1—Screening all persons in the febrile stages of the disease.

2—Complete cures of all cases of malaria. Elimination of the carrier cases.

3—Destruction of mosquitoes.

4—Draining or kerosening of mosquito breeding places.

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DIARRHEA IN INFANTS.

During 1909, the deaths of children two years of age and under was 7,970. This was 25½ per cent of the total deaths at all ages. Of these under two years, 3,232 died from infantile diarrhea. This figure is more or less inaccurate.

In 1907, the number of deaths from convulsions was 510; in 1909, it was 29. This difference is represented by cases which, in the main, are now recorded as having died from diarrhea. Many of the cases of marasmus and other ill-defined causes belong in the same category. Many of the infantile deaths from pneumonia are cases of diarrhea with a terminal pneumonic infection.

In infantile life the intestinal tract is in much the same position that the respiratory tract is in during the whole of life; in contact with a mixed bacterial flora and with a small amount of local immunity thereto. Later the lymph tissue and the liver as well as the intestinal walls have become habituated to the intestinal flora and food bacteria and to the products of these. But the baby's digestive and assimilative apparatus is not immune. In spite of this, we insist on feeding our adults cooked foods and feeding our babies raw foods.

It is needless to say that the laws, customs and rules are made by adults. Information which is authoritative is, that in all countries where the babies make the laws and customs the rule is the other way. The babies eat cooked food and the adults eat raw foods.

The art of cooking was invented by a bacteriologist. He did not know it, but that was what he was, and he was working at his trade. The tastes of men can be adjusted to uncooked food as well as to cooked food. It is the bacteriology of raw foods which makes them fundamentally impossible for adult use. Cooks are bacteriologists working at their trade. But the baby must feed upon the most unclean of foods and the best known natural culture medium, and he must eat it raw.

This is all right, when he sucks his milk directly from his mother's breast. No germs can get in; an air tight connection has been made. But the city baby sucks a cow through a very long tube. His mouth grasps a rubber nipple. This is on a bottle in a city tenement house. The bottle is the end of a "tube" which runs around through the kitchen. This tube is open to the air in many places. The cow's teat runs its milk into a can in a dirty barn. Dirty hands get into the milk several times while in the barn. The barn and milk house handling takes from one to twenty-four hours, and the milk is usually warm in summer. The milk-tube running from the cow to the baby runs about five miles from the barn to the railroad platform. Here it "coils" around for an hour or more. It then gets into a baggage car and rides fifty miles to town;

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MOTHER'S MILK FOR MOTHER'S BABE
COW'S MILK FOR CALVES

(God's Plan)

The Long vs. The Short Haul

70 percent of city babies get their food through a tube 60 miles long.

It takes about 36 hours—often 42 hours—for the milk to run from the cow end of the tube to the baby end of the tube.

This tube is open in many places and baby's food is frequently polluted. It is often wrongly kept in overheated places.

Then there may be a diseased cow at the country end of the tube.

And Yet Some People Wonder Why So Many Babies Die!

On the other hand the mother-fed baby gets its milk fresh, pure and healthful—no germs can get into it.

To Lessen Baby Deaths Let Us Have More Mother-Fed Babies.

You can't improve on God's plan.

For Your Baby's Sake—Nurse It!

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then into a wagon and rides three miles to a milk depot. The milk is now veteran, old, travelled, dirty and frequently warmed. Here it may be strained and filtered. It is usually cooled and it is often pasteurized. It stays with the dealer eighteen to twenty-two hours and occasionally forty-two to forty-six hours. The tube then runs onto a wagon and around the streets for several hours; then into a kitchen where it runs around for one to twenty-four hours, frequently warm. The tube is open at many places. It then runs into a rubber nipple and this the baby sucks.

When God planted in a baby the instinct to suck his mother, He wasn't thinking about cans and wagons and railroad trains and dirty hands and cows.

Mother's milk should be eaten raw, but this "elongated article" should be cooked. But this is not the sole reason why babies die.

The "curve" of infant mortality follows closely the "curve" of poverty. When the standards of living go below a certain point, the infant mortality increases.

Poverty increases infant mortality by decreasing the number of mothers who nurse their babies. The percentage of mothers among the non-workers who fail to nurse their babies from other considerations, is small. In addition, the safeguards which they throw around their babies, hold their death rate to the normal.

Poverty decreases the quality of the mother's milk among those women who nurse their babies; poverty causes crowding; the use of rooms ill-ventilated and poorly lighted, unclean and unhygienic, located in parts of town where there is the most garbage and the most flies. The poor baby gets the poorest quality of milk which is allowed and the nursing falls either to an overworked mother or to small children.

But at that, the infant mortality among the poor is not as high as in institutions caring for nurselings. The superlatively high rate among institutions caring for nurselings is due to several factors, viz:

1. The contagiousness of diarrhea.

2. The bad inheritance of the babies. Many being from syphilitic or alcoholic parents; many of them being illegitimate.

3. The generally bad condition of a large percentage of the children who enter such institutions.

The contagiousness of diarrhea is of no consequence in ordinary families living in a neighborhood where houses are isolated and babies are not very numerous. The infection cannot reach from the sick baby to the susceptible babies. It is of more consequence where the people are closely crowded and babies are numerous.

Flies and fingers can bridge across from the feces of a sick baby to the milk of a well baby. In a nurselings' home, usually the sick and well babies are together. Flies and fingers can and frequently do bridge the chasm between the feces of the sick and the milk of the well. This is the principal reason for the excessive mortality among the babies in institutions.

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The necessities then are:

1. That diarrhea be classed as a contagious disease. (For three years the Chicago Health Department has been classifying institutional infantile diarrhea as a contagious disease.)
2. That babies with diarrhea be separated from the well.
3. That flies be screened away from the babies.
4. That there shall be the most rigid fly exclusion from the diarrheal babies and the diapers.
5. That hand infection be provided against by: (*a*) separate nurses for sick and well, and (b) by rigid rules for hand disinfection for nurses.
6. That the milk be: (*a*) certified or (*b*) cooked.

The following provisions are necessary for the decrease in infantile diarrhea as a household disease:

1. (*a*) Fresher milk.
   (*b*) Cleaner milk.
   (*c*) Colder milk.
   (*d*) Pasteurized milk.
   (*e*) Better care of the milk in the home.
2. (*a*) Increase in breast feeding.
   (*b*) Better nourishment of mothers.
3. (*a*) Better nursing care. Instructional visits to homes by nurses.
   (*b*) Club instruction of mothers, including church clubs.
   (*c*) More institutional care of babies, by tents, day nurseries, creches, homes and hospitals.
4. Better care of sick babies by means of—
   (*a*) Hospitals, tents, dispensaries.
   (*b*) Visitation by nurses.
   (*c*) Better milk.
   (*d*) Protection against infection through flies, fingers and contact.

HEALTHGRAMS.

From *The Bulletin.*

When you don't know what to eat—eat nothing.

* * *

An anemic child is the ghost of civilization.

* * *

Eat and drink moderately today in order that you may do so tomorrow.

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REGISTRATION OF VITAL STATISTICS.

In the registration of vital statistics the first consideration is accuracy. The greatest necessity is that the cause of death should be accurately set forth on the certificate. The inaccuracies are much greater than one would imagine. Wood found that fourteen per cent of the cases coming to the Dunning Hospital for late consumption were improperly diagnosed. Cabot's figures indicate even greater inaccuracy in diagnosis. The statistician of a large life insurance company once advocated the idea that deaths of children under one year of age should be registered as deaths of children of that age, without further data. He thought that information as to the cause of death was so inaccurate as to make it usually valueless and oftentimes misleading. An autopsy on each case is impossible. While autopsies set forth the gross lesions existing at the time of death, they frequently fail to set forth the cause of death. The cases referred to the coroner are sometimes, though not always, autopsied. The primary object of the coroner's inquiry is to fix the responsibility for the death; the vital statistics features are quite secondary.

Therefore the available methods better determining the cause of death are as follows:

1. Autopsy where possible.
2. Reference of certain cases to the coroner.
3. A proper supervision of death certificates as they come to the registration desk. About one-third of the death certificates presented cannot be accepted *prima facie*. Many of the inaccuracies are in data which are supplied by the family or undertaker; many are medical inaccuracies. About fifteen per cent of our death certificates need to be changed with regard to some part of the medical data. A registration bureau which accepts death certificates as they are offered will furnish statistics of limited value.

The next question that arises is, how shall deaths be classified?

Quite generally the International Classification has been adopted. In it there are many points which are open to adverse criticism, but the necessity for uniformity outweighs these objections. Next to the necessity for registration of deaths comes the necessity for proper supervision of the certificates. Next comes the necessity for uniformity in classification. For this there is needed, first, a classification of causes and, second, a uniform interpretation of the data.

Since January 1, 1910, the Chicago Department has forwarded its certificates to Washington where they have been classified by the Vital Statistics Division of the Census Bureau. In order that the statistics should not reflect the local bias, this is highly desirable.

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When the next revision of the International Classification of the Causes of Death is made, the following major heads should be adopted:

1.—Diseases of major sanitary importance, e.g.—diseases in which contagiousness or communicability is active and from which a considerable death rate results.

2.—Diseases of minor sanitary importance, e.g.—diseases in which contagiousness and communicability are less or in which the death rate is low.

3.—Diseases of sociologic importance.

4.—Other diseases arranged by organs.

5.—Ill-defined and indefinite returns.

1. Typhoid fever, smallpox, chickenpox, scarlet fever, diphtheria, measles, whooping cough, enteritis and diarrhea (under two years and over two years), dysentery (under two years and over two years), and tonsillitis.

2. Cerebro-spinal fever, rheumatism, mumps, erysipelas, septicemia, pyemia and bacteriemias, glanders and farcy, rabies, tetanus and trismus, thrush, carbuncle, actinomycosis and trichinosis, anthrax, other infectious, contagious and parasitic diseases.

3. Influenza, tuberculosis (of the lungs, larynx, meninges, abdomen, spine, joints, glands, supra-renal capsule, general, other organs and parts), syphilis, gonorrhea, pneumonia (lobar, broncho and undefined), carcinoma and sarcoma, puerperal septicemia, malformations, affections of early infancy (including premature birth, congenital debility, atelectasis, icterus neonatorum), violence (including suicide, accidents and manslaughter).

4. (*a*) Diseases of nervous system; meningitis (simple), epilepsy, softening of brain, general paralysis of insane, other forms of mental disease, other diseases of the brain, locomotor ataxia, other diseases of spinal cord, and other diseases of nervous system.

(*b*) Diseases of the circulatory and lymphatic systems and ductless glands; angina pectoris, pericarditis, endocarditis, myocarditis, other diseases of heart, apoplexy, embolism and thrombosis, gangrene (dry), aneurism, arteriosclerosis, diseases of veins, diseases of spleen, exophthalmic goitre, other diseases of thyroid.

(*c*) Diseases of the respiratory system; laryngitis, other diseases of larynx, bronchitis (acute and chronic—not pneumonia or tubercular nor due to heart disease), pleurisy and empyema (non-tubercular), asthma and emphysema, and other diseases of the respiratory system.

(*d*) Diseases of the digestive system; diseases of mouth, pharynx and esophagus, gastritis, gastric ulcer, other diseases of stomach, diseases of pancreas, appendicitis, hernia, intestinal obstructions, other diseases of intestines, cirrhosis, acute yellow atrophy, hydatid

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tumor, and other diseases of the liver, biliary calculi, cholecystitis, other diseases of gall-bladder and of digestive system.

(*e*) Diseases of the genito-urinary system; nephritis (acute and chronic), pyonephrosis, other diseases of kidney, diseases of bladder, calculi of urinary tract, diseases of prostate, non-malignant tumors of the ovary, other diseases of ovary, non-malignant tumors of uterus, other diseases of the uterus, diseases of Fallopian tubes, other diseases of genito-urinary system.

(*f*) Puerperal affections; unavoidable abortion and miscarriage, extra-uterine pregnancy, other accidents of pregnancy, puerperal nephritis, puerperal hemorrhage, placenta previa, other causes incident to childbirth.

(*g*) Diseases of the skin.

(*h*) Diseases of the locomotor system; non-tubercular diseases of bones and joints, other diseases of locomotor system.

(*i*) Diseases of special senses; eye and ear and adnexa.

(j) Diseases of undetermined classification; rickets, diabetes, scurvy, leukemia, pernicious anemia, Addison's disease.

5. Ill-defined and indefinite returns (*to be eliminated wherever possible*); convulsions, encephalitis, paralysis, dentition, peritonitis, congestion, gangrene and hemorrhage of lungs, purpura hemorrhagica, anemia, old age, heart failure, uremia, dropsy, ascites, anasarca, inanition, marasmus, congenital debility (over three months), abscess, tumor, unknown cause, other ill-defined causes.

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REGISTRATION OF BIRTHS.

Nowhere in this country is the registration of births satisfactory; this because it has been the concern of medical men and its medical relations have been kept to the fore. The way to get complete registration of births is to establish the legal standing of birth registration in the following manner:—

1. Provide that proof of descent shall be through birth registration. Make it a necessity to the inheritance of property and for the establishment of inheritance and dower rights. Increase the difficulty of making proof in ways other than by a certificate of registration.

2. Provide that it shall be the proof of age for school purposes, and increase the difficulties of making other proof.

3. Provide that it shall be the proof of age under child-working laws. Increase the difficulties of making other proofs. (These suggestions as to increasing difficulties of making proof relate to administration methods, since these are especially lax.)

4. Make such a certificate proof of age for securing a marriage license.

5. Make such a certificate a requisite for the issuance of a burial permit at time of death.

A law embodying the points should contain a provision that all minors not registered should register within a certain length of time, and that at the expiration of that time the law should become operative.

The present law provides that the report shall be made by the attending physician or midwife, or by the head of the family. The head of the family assumes that the divided responsibility lets him out. The medical man knows that the blank calls for no medical information and therefore he is prone to disregard it. The law should place the responsibility on the parents of the child.

Concerning the question as to where birth reports should be registered, there is much to be said on both sides, but registration is always done better by health departments than by the county clerks. This means that the supervision of poor laws is better done by health departments, recognizing as they do their life importance, than it is by county clerks who see in it just an ordinary official act. It does not follow, however, that county clerks could not do well with a good law. Birth registration certainly belongs in a bureau of vital statistics and such a bureau, considering all of its relations, belongs in a health department.

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There is some difference of opinion as to the time limit for birth registration. Registration twenty-four hours after birth is open to the objection that frequently the baby is not named while less than twenty-four hours old.

The advantages of immediate registration are:

1. The securing of more accurate statistics, making it possible to check baby deaths against births; very important since 7.2 per cent of the babies die within twenty-four hours of birth, and 21.7 per cent within one week.
2. Frequently, the father is not otherwise employed on that day.
3. It avoids that procrastination which leads to neglect.
4. It would tend to prevent some blindness.
5. It is necessary in order that it would tend to decrease the appalling loss of life within the first month after birth.

The naming of the baby within twenty-four hours is easily accomplished and should be willingly done when so much is to be gained by it.

The birth registration bureau should be kept open during nights, holidays and Sundays.

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MORTALITY IN EARLY INFANCY.

In Chicago during the four years, 1906-1909, a total of 6,799 babies died from congenital defects and accidents, as follows:

	1906	1907	1908	1909	Total 4 Years	Per cent of total defects and accidents
Atelectasis	69	93	94	118	374	5.4
Hydrocephalus (congenital)	23	10	19	19	71	1.0
Icterus neonatorum	32	41	44	37	154	2.3
Imperforate anus	4	2	7	3	16	0.2
Injuries at birth	48	137	117	185	487	7.2
Patent foramen ovale	77	100	118	133	428	6.3
Premature birth	523	637	671	684	2515	37.0
Spina bifida	24	24	33	25	106	1.6
Marasmus, infantile	505	468	395	274	1642	24.2
Other congenital defects and accidents	233	180	305	288	1006	14.8
Totals	1538	1692	1803	1766	6799	.....
Per cent of total deaths under one year of age	25.2	25.2	26.1	27.6	.....	26.0

The baby who died as a member of any of these groups did not get a good start in life. A fair percentage of the children that die during the first few days of life are syphilitics.

Diseases vary greatly in their tendency to mark the offspring. A syphilitic mother usually "miscarries." If the child lives through pregnancy, it not infrequently dies as a result of the exposures and accidents incident to birth. If it lives to be born it oftentimes cannot adjust itself to the temperature and the relative humidity of the room. Its lungs cannot accustom themselves to air, or its stomach to food. It dies and the doctor may honestly call the cause any one of several diseases.

On the other hand, the child of a consumptive mother probably will be thrifty unless the mother's illness has greatly reduced her. The child of a mother having gonorrhea is liable to get a gonorrheal infection of its eyes as it is being born, but if it escapes this accident it will be as thrifty as the average child. Mothers who are overworked or under-worked bear children who are not thrifty.

Methods for reducing the deaths and accidents in the first month of life are as follows:

1. Preventing those from having children who have conditions which would especially influence the progeny (a) syphilitics, bleeders, hereditary ataxics, idiots; (b) those who subject their progeny to unusual hazards; those having a deformed pelvis; those having gonorrhea.

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2. Furnishing food and home care with light work for all mothers who are in need of it, for the last two months of pregnancy.

3. More and better maternity hospital care and better midwife service. Better nursing service and better medical service.

4. Visitation of every new born babe by a nurse from the health department for special care of the eyes and also for general supervision.

HEALTHGRAMS.

From *The Bulletin.*

Educate the mother and save the child.

* * *

In saving the child you are saving the state.

* * *

Teasing baby to make it laugh is a crying shame.

* * *

The greatest menace to the nation: A childless home.

* * *

The cow is the foster mother of millions of the human race.

* * *

Tender-aged children in factories mean a crippled citizenship.

* * *

Stop that baby's crying. Give it a drink of water—that's all.

* * *

A common poison pump—a baby bottle with a long rubber tube.

* * *

While mothers are working in factories, infants may be wasting in the homes.

* * *

The employment of growing children is like the felling of young trees—an outrage upon nature.

* * *

As a national industry, raising strong, healthy human beings should be as profitable as raising fine breeds of live stock.

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THE APPLICATION OF CORRECTION FACTORS TO VITAL STATISTICS.

No factor is so important in determining life expectancy as age. Next in importance is occupation. Third, ranks nationality; fourth, home environment; fifth, sex; sixth, income. Somewhere in such a list comes inheritance. It is difficult to separate these factors. A complete separation is impossible. With the present data available in a department of health, organized to the degree that the Chicago Department is, the relation of age, nationality and sex can be fairly well determined. A beginning has been made on occupation. This, within three years, will be on an illuminating basis.

Influence of age on vital statistics: Once every ten years we get a fairly accurate census showing the number of people living at each year of age. From these, fairly accurate "curves" are made showing the number of people of each year of age during the intercensal years. The age of each person dying is set forth on the death certificate. From these two sets of data, we determine the death rate of Chicago citizens at given ages.

The death rate among those younger than one day old is 9.5 per 1,000 and among those less than 7 days old it is 28.5. The rates in these age periods are fruitful sources for study. They furnish the best available answer to the question, "What quality of obstetrical service is furnished in Chicago?" In addition they throw some light on such questions as the influence of labor on women while pregnant, on the influence of income in the home and on inherited defects and diseases.

The death rate for children under one year of age is 131 per 1,000. Comparing this rate with the rate for the same age period for previous years helps to answer such questions as relate to maternity service, mothers employed, household income, household sanitation, influence of nationality and of milk supply.

The death rate between one and two years of age is about 38 per 1,000 living at that age. A comparison of the rates for this age group for a period of years helps us in studying such questions as influence of milk supply, household income, nationality of mothers and home sanitation.

The death rate of children under two years of age is always unduly high. If a community has more than five per cent of its total population under two years of age it will have a high gross death rate.

Between three and twenty years of age the death rate is low. The Chicago rate is somewhere in the vicinity of 4 per thousand of the

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population. About thirty-eight per cent of Chicago's population falls within this age period. In any community in which the people of these ages constitute a large part of the total population the gross death rate will be low.

To illustrate a part of this idea in a concrete way: If there had been an extraordinary number of children born during 1908, the number slumping sharply at the end of that year, there would be a heavy gross death rate in 1908 and 1909, but the rate would return to the normal in 1910, and would be abnormally low for about twenty years thereafter; this, on the assumption that other factors remain even.

The community interest which attaches to the death rate between three and twenty years of age is because of the susceptibility to contagion during these years. It is, therefore, a fair measure of the contagion in a community.

Among the people between two and forty-five years of age the death rates are less than the community average. In the twenties, thirties and forties, consumption, colds and pneumonia are largely responsible for the death rates. If a community has a high rate for these diseases, it will have a high rate for these ages, and vice versa. About eighty per cent of Chicago's population is of these age periods.

After the age of forty-five the death rates increase rapidly. At fifty-five the rate is nearly twice as high as at forty-five; at sixty-five, nearly twice as high as at fifty-five; at seventy-five it is twice as high as at sixty-five and at eighty-five twice as high as at seventy-five. Fortunately for Chicago but 14.5 per cent of the population falls within these age groups. In a community where there is a large percentage of old men and women, the gross death rate will be correspondingly high.

Effect of Occupation: During 1910 the Chicago Health Department began a more earnest effort to get occupation data. The death certificate now calls for such detail as to occupation as will enable us by a competent analysis of the data to determine whether the occupation contributed to the hazard of accident or disease in a fair percentage of the deaths reported. In order to determine rates it will be necessary to determine the population engaged in the different occupations. This will not be difficult for the different trades which are well organized; but as relates to untrained labor, deductions will be less satisfactory. In the case of children some rather problematic data on the household income should accrue.

No difference in occupation gives us as much difference in mortality rates as is found between the different mortality rates of people at different ages, especially those at the ends of the scales.

Studies of occupational mortality in turn must have correction factors applied to them. A "normal" should be worked out for each trade and, primarily, an effort should be made to bring the high rates

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of the more hazardous working places to that "normal." Subsequently, a more direct effort should be made to lower that "normal."

The life insurance companies have some valuable data on occupational death rates among selected risks. The new bureau, provision for which has just been made by the life insurance companies, should furnish valuable data on this phase of vital statistics. The various labor unions are beginning to publish mortality and morbidity data of those employed in their trades.

A part of the importance which attaches to the occupation factor in its relation to mortality is that so many of the contributing conditions are remediable.

Influence of Nationality: Gross death rates are largely influenced by the nationality, race and religious groupings of those peoples who live in segregated communities within our cities.

The death rate among negroes always heads the list. Negroes serve to increase materially the rates of such cities as Washington, Baltimore and New Orleans, where they are a large part of the population. In certain diseases, for example consumption, their extraordinarily high death rate serves to elevate the general consumption rate of a city even where they make up so small a percentage of the population as in Chicago.

The gross death rate among the Slavic people is high. Their infant and child rates are so disproportionately high as to raise the general child rate of the city. As the percentage of our immigration from eastern Europe, western Asia and southern Europe increases, our gross death rates will increase, unless our growth in sanitary regulation keeps pace with the growth of immigration from those countries where the death rate is high. On the other hand, the Slavic people have a low consumption rate. Their insularity has shielded them in a measure from outside infection and the foci of infection within their colonies have not attained large proportions.

The Jewish infant rate is low, but their consumption rate is high.

Household income and home environment: These factors are not exactly parallel, yet speaking generally, they are a part of the same problem. The conditions of the home are influenced a great deal by the standards of the people who live in them. The same amount of money spent for rent, food, warming and cleaning by two mothers not unfrequently gives a much cleaner and more hygienic home for one family than for the other. Again, there is modification with respect to the allotment of the family income; men will differ in the percentage given to household expenses.

Generally speaking, the family income determines the home environment. Where the family income is small, infant mortality is high. It is not an undue factor at any other age period. In ordinary studies of vital statistics there is no need for a correction factor for

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family income and home environment but in certain special studies a correction factor of this character is of consequence.

Sex Influences: A health department is in a position to accurately study the relation of sex to mortality and much can be gained from such a study.

Boy babies have a higher death rate than girl babies for some reason impossible of explanation outside of speculation, since in the earlier years of life there is not much sex differentiation in the grosser characters of the human body. From three to twenty years of age boys and girls have an equal chance of living. In all the years after twenty, the death rate of females is lower than of males.

As the proportion between males and females differs in different cities, an estimation of the relative security of a given life in the two cities demands that a correction factor for sex shall be applied to the gross death rates of the two cities.

A matter of greater consequence, is that studies of this character shall be applied to individual diseases; for example: The consumption and pneumonia rates among males differ markedly from the rates for the same diseases among females. Furthermore, the "curves" showing increases and decreases in different years differ in the two sexes. From such a study conclusions can be drawn as to the factors which are making for the spread of the disease or for its control.

Non-Residents: Certain vicinities insist that a correction factor shall be applied for non-residents. This is difficult to do. If non-residents dying in Chicago are to be subtracted from Chicago's rate then to the Chicago figures should be added those Chicagoans who die in Colorado, New Mexico, Texas and elsewhere. It is usually held that the one about offsets the other.

In taking a census of the population, the people are credited to the places in which they are found. Certain cities would gain by such a factor; others would lose. Penitentiary populations are added to the towns in which such institutions are located. Their populations have among them no infants. The death rates among their populations are less than the death rates among men and women of the same ages outside of such institutions. Therefore, a prison population lowers the gross death rate of the town in which it is located. Asylum populations have a higher morbidity rate and the average age of their populations is higher; therefore, they do not serve to lower the death rate of a city in which they are located. A "home" for boys or girls would serve to lower the rate. A resort town attracting large numbers of people who are gravely sick (for example, Denver and El Paso) would have its rate raised by these accessions to its population, even though the number of babies and old men and women among them is small.

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With the growing tendency toward hospitalization for all illness, some plan should be devised by which correction factors for non-residents may be applied.

The sending into a city of cases of typhoid fever means the addition to its population of a group with a death rate of 100 per 100,000; higher than any age rate between two and seventy years. It is probable that this is more important as it relates to the death rate from certain diseases than it is with regard to the general death rate—diseases, for instance, which are ambulatory up to a certain stage; for example, tuberculosis and typhoid. Diseases for which the treatment is surgical are a small part of the problem. A considerable part of Chicago's pneumonia "curve" for January, February and March is influenced by the migratory laborers who "lay up" here during the four winter months.

The county institutions at Dunning and Oak Forest are outside the Chicago city limits, but ninety per cent of their population are nominally Chicago residents; the remainder are residents of the county outside of the city. Of the ninety per cent which are supposed to be residents of Chicago, a considerable number belong to the ranks of wandering or unattached laborers and some are residents of towns and villages having slight charity hospital provisions. The number of deaths in these institutions in 1909 was 1,036; in 1910, 897. These deaths are included in the Chicago mortality figures, yet the population of these institutions has not been added to the Chicago population.

Another correction factor which is frequently employed in some cities, notably New York, is that of excluding from the corrected death returns all children living less than twenty-four hours after birth. I should judge that the basis of such an exclusion is an opinion that many such children are included in the stillbirths and as this matter cannot be regulated, it is better to so include all of them. It would seem clear that it is good policy to throw the weight of authority on the side of reporting these as live births rather than as stillbirths. Such cases should be included in the death returns on account of their relation to the infant mortality rate and to birth accidents. Such a deduction might be excused if it were the universal practice, but it has little or no virtue when it destroys uniformity.

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DEATHS BY AGES.

Chicago, 1910.

Age	Deaths	Age	Deaths
Under 1 year	6841	51-52 years	386
1- 2 years	1746	52-53 "	380
2- 3 "	737	53-54 "	375
3- 4 "	459	54-55 "	370
4- 5 "	336	55-56 "	360
5- 6 "	213	56-57 "	350
6- 7 "	185	57-58 "	340
7- 8 "	159	58-59 "	346
8- 9 "	128	59-60 "	350
9-10 "	118	60-61 "	355
10-11 "	104	61-62 "	365
11-12 "	86	62-63 "	375
12-13 "	80	63-64 "	360
13-14 "	94	64-65 "	350
14-15 "	105	65-66 "	340
15-16 "	115	66-67 "	333
16-17 "	134	67-68 "	350
17-18 "	155	68-69 "	333
18-19 "	174	69-70 "	314
19-20 "	197	70-71 "	320
20-21 "	238	71-72 "	299
21-22 "	249	72-73 "	286
22-23 "	266	73-74 "	275
23-24 "	279	74-75 "	265
24-25 "	286	75-76 "	255
25-26 "	287	76-77 "	250
26 27 "	293	77-78 "	250
27-28 "	299	78-79 "	215
28-29 "	305	79-80 "	185
29-30 "	313	80-81 "	155
30-31 "	314	81-82 "	120
31-32 "	318	82-83 "	105
32-33 "	324	83-84 "	100
33-34 "	330	84-85 "	100
34-35 "	336	85-86 "	93
35-36 "	350	86-87 "	82
36-37 "	359	87-88 "	71
37-38 "	361	88-89 "	61
38-39 "	361	89-90 "	58
39-40 "	362	90-91 "	45
40-41 "	362	91-92 "	35
41-42 "	363	92-93 "	30
42-43 "	368	93-94 "	25
43-44 "	364	94-95 "	20
44-45 "	364	95-96 "	13
45-46 "	380	96-97 "	6
46-47 "	410	97-98 "	3
47-48 "	435	98-99 "	2
48-49 "	455	99-100 "	1
49-50 "	469	100+ "	6
50-51 "	402		

The above table is crude. The figures for deaths at different age periods under five years of age are accurate but after that, the total number dying in a five-year group is divided by five and the quotient is set down as the number dying at the given age.

What we learn from such a table is that the death rate of a town is determined by its infant mortality. When the under-one-year and the one-to-two-years deaths are 8,587 out of a total of 33,241 at all ages, the ability of infant mortality to influence the general rate is easily seen. A ten per cent reduction in the under-two-year deaths would mean a saving of 858 lives. A ten per cent saving at the age of ten to twelve years would mean a saving of only nineteen lives. Furthermore, we see that the total number of deaths

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under two years of age is equal to the total number of deaths of people fifty-four years of age and over.

Leaving out the abnormal number of deaths in infancy, the age "curve" as to the actual number of deaths is as follows: There is a rapid drop in the years of earlier childhood until the low level is reached at about twelve years. There is then a gradual rise through the 'teens continuing through the twenties and thirties, becoming more gradual until the maximum is reached at about forty-eight. There is a gradual recession through the forties, fifties and sixties. The drop becomes greater in the seventies and eighties, reaching the same level as twelve years about the middle of the eighties.

Leaving out the first five years and adding deaths from five to forty-five, we get a total of 10,111. If we add the years forty-five to seventy-five, we get 10,453. Therefore, conditions making for or against the health of older men affect the death rate more than do factors working for or against the health of younger men. It is to be understood that these statements refer solely to the immediate effects, for a large part of the diseases of old age are the result of the experiences of childhood and youth.

The incidence of contagion in children does not show in the low mortality rates of childhood years, e. g., 5 to 10 years, 5.55 per 1,000; 10 to 15 years, 3.02 per 1,000. But the strains of these years are manifested in "breaks" in maturer years, which "breaks" are technically termed chronic endocarditis, chronic nephritis and kindred affections.

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MILK.

The average producer of milk produces it as a means of profitably disposing of the hay and grain grown on the farm. A second factor is the production of manure. Under these circumstances, it is impossible to have it made in a very cleanly way. If any housewife will take the milk as it comes in the morning and filter it through a small piece of absorbent cotton, she will find a good deal of dirt, unless she buys filtered milk. The larger and some of the smaller dealers filter out the dirt before they bottle the milk. Filtration removes the dirt which the eye can see; it leaves the bacteria. A bacteriologic examination of milk which has been filtered shows a lower count than a bacteriologic examination of the same milk unfiltered. Most of the Chicago milk is both filtered and pasteurized before it reaches the consumer.

Pasteurizing kills all of the pathogenic bacteria, ninety-nine per cent of all the bacteria and some of the bacterial products in the milk. It is better than raw milk, filtered or unfiltered, but it is not perfect. It is good enough for use by adults. It is infinitely better than raw milk for babies. In fact in Chicago no mother is justified in feeding raw commercial milk to her child.

In the consideration of the milk problem, cities may be divided into three groups: Cities in which cows are kept within the city limits, on or near the premises where the milk is consumed; cities where cows are kept on farms near the city limits or within them, the milk being distributed by wagons which run from the farms to the homes of the consumers; cities with a railroad haul. In the latter case the milk produced on a farm fifty to five hundred miles from the city is loaded on a wagon and hauled to a railroad station, loaded on a train and hauled to town, loaded on a wagon and hauled to a depot, loaded at the milk depot and hauled to the home of the consumer.

The problems of the first type of town are very simple. The milk handling is especially easy but the nuisance and pasturage are propositions which usually disturb the town. The cows should be tuberculin tested, free from caked udder and other disease. The stables should be clean and the milking should be properly done. The morning's milk should be consumed before night; the night's milk before morning. The refrigerator should be clean. Milk produced under these conditions will keep the baby healthy.

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A town with a wagon-hauled milk should have:

1. Tuberculin tested and otherwise healthy cows.
2. Inspected barns and premises.
3. A dairy visiting committee from mothers' and other women's clubs.
4. A double delivery in summer and a single delivery in winter. In summer the morning's milk should be consumed by midnight, the evening's milk by ten the next morning.
5. The milk kept cold in the house.

No city which feeds its babies on railroad-hauled milk has a baby death rate of less than 13 per 100,000 total population.

In Chicago, railroad-hauled milk is twenty-six to ninety-six hours old when it is consumed. In order that milk shall be fit to drink when it is as old as this, it is necessary that it shall have been kept ideally clean and cold. Ideal milk must be fresh, clean and cold. If it cannot be fresh, the other two standards must be very proper and very well maintained or the product is unfit for use.

Milk for babies must have a higher standard than that required for milk for adults and certainly much higher than that required for milk used for cooking.

Certified milk is an effort to solve the problem of baby milk. It is milk which is produced very cleanly, is properly handled and has a bacterial count guaranteed to be under 30,000. It is nearly as old as ordinary milk when it reaches the consumer. In consequence it is necessary to keep it scrupulously clean. This means expensive production; such milk is never sold for less than fifteen cents a quart. It is doubtful if it is profitable to the producer at that figure. It is a milk produced for the well-to-do. It has been encouraged by health departments and physicians for the past five or ten years. They should continue to encourage it in every legitimate and proper way. It is the best milk sold on the market. But it is not a solution of the problem of getting good milk for children in families where the income is very small.

The best solution of the cow's milk problem for this group of children is to bring the cows into town; enough of them to give milk for this group of babies. A police census shows 77,000 horses in town; there are probably 100,000. The health department has record of 1,800 cows in town. The first ward has 4,800 horses. Sixty-two cows would supply its milk-fed babies with milk.

Following is the number of cows required to supply milk for the babies of each ward in the city according to the number of babies enumerated in the school census of 1910. It is figured that one-tenth of the babies under one year of age and two-thirds of the babies between one and two years of age are using cow's milk in whole or at least in greatest part.

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WARD	Babies Under 2 Years of Age	Cows Required to Produce Milk for these Babies
1	632	62
2	820	82
3	1248	125
4	2512	251
5	2666	266
6	1415	142
7	2891	289
8	3303	330
9	2053	205
10	2739	274
11	2857	285
12	4349	435
13	1650	165
14	1906	196
15	2296	229
16	3736	373
17	3417	342
18	516	56
19	2565	256
20	1546	155
21	885	89
22	2243	224
23	1599	160
24	2034	208
25	2860	286
26	2514	252
27	4444	444
28	2498	250
29	4105	410
30	2115	211
31	3079	308
32	2417	242
33	3208	320
34	2433	244
35	2194	219
Total	83230	8329

If the cows are distributed in small numbers, the wagon service can be eliminated, as people will send a considerable distance for baby milk. This has been demonstrated at the Straus milk depots.

A good plan for the accomplishment of this service is to have the baby milk served by the city. The supplying of baby milk as a city function would save many more lives than the supplying of good water. The serving of water as a community function is held to be a fundamental duty of all cities and is discharged by every city of sufficient size.

If the city does not see fit to enter into this work, a monopoly with city partnership is the next best thing; a partnership such as that now existing with the street railway company, monopoly which would assure the city such access to the books and such control as would keep the earnings of the company from rising above the proper level and yet assure service; the good effects without the abuses which might otherwise arise. This method would give good baby milk or pasteurized milk. I would rate the above in desirability in the order named.

My observation on certified milk leads me to believe that the certification should be embodied into law; that certified milk should either be produced by the city or by dealers who are licensed to

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produce certified milk. They should pay a license fee sufficient to defray the expense of certifying. It is the only way to get efficient inspection continuously maintained. It would not be perfect but it would be better than the present methods.

Pending the time when these things can be brought about, control of a city's milk supply demands the following ordinance provisions and inspection service necessary to make them operative:

1. Proper milk production, including licensing of all milk producers.

2. Dating of each bottle or can, showing age of the milk with provision against the sale of old milk.

3. A proper temperature for the milk, with provisions against the sale of warm milk or milk which has been warm.

4. Tuberculin testing of cows.

5. Pasteurization of milk.

6. Proper handling of the milk in transit and in homes.

7. Proper handling of milk in depots, stores and on wagons.

1. A necessity of the proper production of milk includes:

(*a*) Farm inspection and scoring on the United States score card;

(*b*) A system of reporting contagious or suspicious cases among the people on the farm;

(*c*) Examination of the water used for washing cans and other utensils;

(*d*) A dirt test of the milk;

(*e*) A bacteriologic test of the milk;

(*f*) Dating of the milk, with the use of tests for age;

(*g*) Temperature control.

2. The farmer should be required to put the date, including the hour, on each can of milk. The bottler should cap his bottles with caps on which a circle is printed, this circle to contain a number showing the date on which the milk was produced. A dealer to comply with this provision of an ordinance, instead of ordering, let us say 3,100 caps with his name printed thereon, would order 31 groups of 100 each with his name thereon, each group showing a numeral.

3. The temperature of milk should never exceed fifty degrees Fahrenheit. The farmers in this locality can easily store ice. The railroads should provide ice for the cars and proper cars for the hauling of milk. The milk should be wet blanketed or iced in the wagons. The dealers should have ice vats in their depots.

4. The Health Department is of the following opinions: (*a*) Tuberculin testing is more than ninety-nine per cent accurate in the diagnosis of tuberculosis; (*b*) the physical examination is not more than fifty-five per cent accurate— of one-hundred physical diagnoses fifty-five will be right and forty-five will be wrong; (*c*) tuberculin testing does not harm the cow, her milk, or her calf; (*d*) tuberculin

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testing gives no information as to the stage of the disease. It does not say whether or not the milk contains tubercle bacilli or the feces contain tubercle bacilli, or the cow is in contagious stage of the disease or whether the cow will give milk profitably or whether she will shortly go into a decline or whether she will pass inspection for meat, or whether she will recover from the disease. In short, it tells us that the cow is tubercular, but that is all it tells us. Therefore, all cows should be tuberculin tested but not all reacting cows should be killed. All tubercular cows should be registered. They should be sold as tubercular cows. To sell them as well cows is cheating and should be prohibited by law along with other forms of dishonesty. Such cows should be kept under observation long enough to determine (*a*) whether they are contagious, (*b*) whether they are profitable.

5. The ordinances provide that all milk which is not from tuberculin tested cows shall be pasteurized. The word "pasteurized" is held to apply to milk which has been so heated that all of the ordinary pathogenic or disease-producing bacteria and ninety-nine per cent of all bacteria are killed. In addition, the Department has the right to exclude from the Chicago market milk which has been produced from cows free from tuberculosis, as shown by the tuberculin test, whenever that milk is spreading typhoid fever, summer complaint, scarlet fever, diphtheria or other diseases. However, the Department allows such infected milk to be sold in Chicago providing it is so pasteurized as to make it safe. If pasteurized milk is infected, subsequent to pasteurization, the Department requires such repasteurization as is necessary to make it safe.

The best pasteurization is proper pasteurization in the home. It is very difficult to get this accomplished, and practically impossible to get it properly done in any considerable number of homes. The next best thing is pasteurizing at 145 degrees Fahrenheit for twenty minutes, and immediate bottling, icing and marketing. Next is continuous pasteurization and bottling. Last is continuous pasteurizing and placing the milk in eight or ten gallon cans.

We believe in governmental pasteurization, and we would like to see the day come when such pasteurization will replace business pasteurization.

We believe that proper pasteurization kills tubercle bacilli, typhoid bacilli, the germs of diphtheria and scarlet fever. It offers the safest means which we now have for guarding against these diseases in the vicinity of Chicago. The very faulty registration of deaths and of contagious diseases in our dairy districts makes impossible any other means of preventing milk-borne infection.

Commercially pasteurized milk sours in about twenty-four to thirty-six hours after the time in which raw milk will sour. The poisons excreted by bacteria are in part destroyed by pasteurization, therefore old pasteurized milk is somewhat less harmful than old raw milk.

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TUBERCULOSIS.

The death rates from tuberculosis other than pulmonary in Chicago during the last three decades were as follows:

1881 to 1890, 2.04 per 10,000 population.

1891 to 1900, 2.30 per 10,000 population.

1901 to 1910, 2.48 per 10.000 population.

Included in these figures is a certain amount of tuberculosis of other organs, but secondary to pulmonary tuberculosis. This amount can be assumed to be the same in each group. After the correction is weighed the most important part of this tuberculosis is ingestion tuberculosis. This increase would then mean that while our efforts directed at pulmonary tuberculosis are producing a small but steady diminution in it, there has been a steady increase in the food-borne tuberculosis. Nor is tuberculosis other than pulmonary a small matter. The mortality tables of the thirty principal causes of death show that it kills more in Chicago in the average year than all of the following diseases: Cholera, diphtheria, croup, dysentery, erysipelas, influenza, malaria, measles, puerperal fever, scarlet fever, smallpox, typhoid fever and whooping cough.

Food-borne tuberculosis affects especially the intestines, glands, bones, joints, peritoneum and meninges. It is frequently fatal in babies. In older children, however, it is usually non-fatal. Therefore, the importance of food-borne tuberculosis is very much greater than is shown by the mortality table.

The following morbidity table and attached memorandum was prepared by E. C. Schroeder, M. D. V., Superintendent of Experiment Station of the Bureau of Animal Industry, Department of Agriculture:

"The true significance of the frequency with which Dr. Park and his associates found bovine types of tubercle bacilli in the tuberculous lesions of children becomes especially apparent when we consider it in connection with the frequency with which children under 16 years of age are affected with tuberculosis.'

"Floyd and Bowditch, in a paper presented to the International Congress on Tuberculosis at Washington, D. C., make the following statement: 'In regard to post-mortem statistics, J. Comby has published reports from the hospitals of Paris, showing that 38.5% of children examined, showed tuberculous lesions. Müller, in Munich, found 43% out of 500 examinations, Hamburger and Sluka discovered 41% in 401 post-mortems in children under fifteen years. The figures apply to tuberculosis occurring in any portion of the body in children dying from various causes.' (Proceedings of the Sixth Int. Con. on Tub. Vol. 11, page 496.)

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"Dr. Hugo Northmann, Assistant, under Professor D. A. Schlossman, in the Klinic für Kinderheilkunde in Düsseldorf, published an article in the *Berliner Klinische Wochenschrift,* Vol. 47, No. 9, Feb. 28, 1910, in which he gives his own results and those of six other investigators on studies concerning the frequency of tuberculosis among children 14 years of age and younger. The various results reported I have brought together in the following table:

PERCENTAGE OF CHILDREN FOUND TO BE TUBERCULOUS BY DIFFERENT INVESTIGATORS.

Ages of Children Tested	By von Pirquet. Per Cent	By Hamburger. Per Cent	By Moro. Per Cent	By Müller. Per Cent	By Petruschky. Per Cent	By Engle & Baser. Per Cent	By Northmann. Per Cent
1 year	7	.....	10	9	.....	.....	.....
1 to 2 years	24	.....	26	24.4	.....	.....	.....
2 years	.....	9	.....	.....	.....	.....	.....
2 to 4 years	37	.....	35	30.5	.....	.....	.....
3 to 4 years	.....	27	.....	.....	.....	16.5	.....
3 to 5 years	.....	.....	.....	.....	.....	.....	47
4 to 6 years	53	.....	41	36 8	.....	.....	.....
5 to 6 years	.....	51	.....	.....	.....	16.6	.....
1 to 6 years	.....	.....	.....	.....	50	.....	.....
6 to 7 years	.....	.....	.....	.....	.....	.....	56
7 to 8 years	.....	.....	.....	.....	.....	30.2	.....
8 to 9 years	.....	.....	.....	.....	.....	.....	70.7
6 to 10 years	57	.....	40	.....	.....	.....	.....
7 to 10 years	.....	71	.....	.....	.....	.....	.....
9 to 10 years	.....	.....	.....	.....	.....	49	.....
9 to 11 years	.....	.....	.....	.....	.....	.....	81.5
11 to 12 years	.....	.....	.....	.....	.....	35.5	.....
7 to 14 years	.....	.....	.....	.....	74	.....	.....
10 to 14 years	68	.....	60	53.7	.....	.....	.....
11 to 14 years	.....	94	.....	.....	.....	.....	.....
12 to 14 years	.....	.....	.....	.....	.....	.....	84 5
13 to 14 years	.....	.....	.....	.....	.....	53	.....
14 years	90	.....	.....	.....	.....	.....	.....
15 to 17 years	.....	.....	.....	.....	.....	.....	100

"'Of the surprising percentages in the table,' Dr. Nothmann says, 'they were obtained with children of the poorer classes and therefore do not give satisfactory evidence for the conclusion that tuberculosis is equally prevalent among children of all classes. It is consoling to know that this is a rational and wholesome view to take, but, nevertheless, the fact remains that the data show conclusively that tuberculosis among children, not necessarily clinically discoverable tuberculosis, is much commoner than most persons realize.'

"Much evidence could be added to the foregoing to show that the infection of the human body with tuberculosis, or the real and often unrecognized beginning of tuberculous disease, is very frequently a phenomenon antedating the age of puberty.

"Now, if we take the data presented by Dr. Park and his associates, we find that 137 tuberculous children, 16 years of age and younger, were examined relative to the types of tubercle bacilli with which they were infected. Of the 137 children 31, or 22.62%, were found to show bovine types of tubercle bacilli.

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"To those who consider the frequency of tuberculosis among children together with the frequency of bovine infection among tuberculous children, it will be evident that the fight against the bovine source of human tuberculosis is not a Quixotic contest, but, on the contrary, an urgently needed fight against an important and undeniable public danger."

The figures of Park and Krumwiede to which he alludes are as follows:

Diagnosis	Adults 16 Yrs. and Over		Children 5 to 16 Yrs.		Children Under 5 Yrs.	
	Human	Bovine	Human	Bovine	Human	Bovine
Pulmonary tuberculosis	568	1 (?)	11	.....	12	.....
Tuberculous adenitis, axillary or inguinal	2	.....	4	.....	2	.....
Tuberculous adenitis, cervical	22	1	33	20	15	20
Abdominal tuberculosis	15	3	7	7	6	13
Generalized tuberculosis, alimentary origin	6	1	2	2	13	10
Generalized tuberculosis	28	.....	4	1	28	5
Generalized tuberculosis including meninges—alimentary origin	.....	.....	1	.....	3	8
Generalized tuberculosis including meninges	4	.....	7	.....	45	1
Tubercular meningitis	.....	.....	2	.....	14	2
Tuberculosis of bones and joints	18	1	26	1	21	.....
Genito-urinary tuberculosis	11	1	1	.....	.....	.....
Tuberculosis of skin	1	.....	1	.....	1	.....
Miscellaneous cases:						
Tuberculosis of tonsils	.....	.....	.....	1	.....	.....
Tuberculosis of mouth and cervical nodes	.....	1	.....	.....	.....	.....
Tuberculous sinus or abscesses	2	.....	.....	.....	.....	.....
Sepsis, latent bacilli	.....	.....	.....	.....	1	.....
Totals	677	9	99	33	161	59
Per cent of human and bovine	98.7	1.3	75.	25.	73.2	26.8

I see in the consumption question two matters of major importance and many of smaller import. The major ones are:

(1) The control of all persons and animals having the disease; (2) purification of the air.

Those of secondary importance are: Better working places; better living places; more thrift; better wages; better care of convalescents; less susceptibility.

Of these several factors, the control of the spreader is of the greatest consequence. The tubercle bacillus is almost a pure parasite. It must have animal bodies in which to live or it will perish. It does not multiply on the ground, in the soil or in water. Far from multiplying, it speedily dies when mixed with dust, when dried, or

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exposed to the sunlight. Therefore, if we could keep it from infecting new animals and prevent the animals at present infected from infecting other animals, the disease would become negligible in five years, and the surveillance and control being properly kept up, it would disappear in ten years.

But the first requisite for control is early diagnosis,—diagnosis at a time when arrest of the disease is within the means of the person affected. I can see no possibility of meeting the problem of the tuberculosis carrier except through earlier diagnosis than now prevails. Diagnosis of tuberculosis through the sputum is of great value when bacilli are found. The fact that bacilli are not found in the sputum should not be construed as meaning that tuberculosis is not present. Tubercle bacilli are not found in the sputum until the necrotic tubercular focus is in communication with the outside air. The disease is therefore habitually complicated by the action of pathogenic and saphrophytic organisms. Arrest is often impossible and in every case considerable time and expense are necessary.

The average patient has not the money or the time to get well unless a start is made before bacilli appear in the sputum. Therefore sputum diagnosis does not meet the community problem. Physical diagnosis and consideration of the history are excellent measures later in the disease. They are fairly satisfactory in the earlier cases which come into the hands of the very expert physician.

But there are 10,000 to 15,000 consumptives always present in this city. They are found among all classes of people, and such of them as are having medical service are being attended by physicians of all grades of medical skill. I do not think anyone believes that physical examination can ever bring these consumptives into the range of control early enough so that twenty per cent of them may be cured or that forty per cent of them may be made safe for those coming in contact with them.

Let us illustrate the personal situation in this way: A man becomes infected with consumption in January, 1911. Until about April his disease is one hundred per cent curable and the time needed for treatment is, say, three months, but his chance of getting correct diagnosis is not one in fifty. From May until January, 1912, his chance of being cured when properly cared for is fifty to seventy-five per cent. From January to June, 1912, his chance of recovery is thirty to fifty per cent. The time required is a year of freedom from labor and care and an additional year of light work. His chance of a proper diagnosis is fifty to seventy-five per cent. From June, 1912, to January, 1913, his chances of recovery is fifteen to thirty per cent. The time required is two to three years. The probability of a correct diagnosis is seventy to eighty per cent. From January, 1913, to June, 1913, his chance of recovery is five to ten per cent. The time required is three to ten years. The chance of a

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correct diagnosis is eighty to ninety per cent. These figures are merely used in an illustrative way. Such studies as are shown by Wood's autopsy studies at Dunning, Cabot's report before the 1909 meeting of the American Medical Association, Evans' study of 1,000 autopsies at Cook County Hospital, indicate that the percentages of accuracy are less than here indicated. Here are five stages in the evolution of every case of consumption.

We have no way of knowing how many cases start with one and stop at some stage short of five, but we do know that every year about four thousand run out the gamut and finish up with five. To the average man who has the disease the resources necessary to win the battle after he gets in classes 3, 4 and 5 are not available. For him there might as well be no hope. Hope is theoretic for him—it cannot be practical. If a persimmon hangs on a thirty-foot limb and a man has a pole ten feet long, for him there might as well be no persimmon or he might as well have no pole. Ninety per cent of the people in class 5 and fifty per cent of those in class 4 have not the resources to make themselves safe for those with whom they come in contact.

The great need is for a means of discovering those who are in class 1, a means that will not be beyond the technical skill of those who will be called upon to apply it as they come in contact with cases in this stage. Eventually a plan something like the following will be adopted:

1—Tuberculin testing of all children in the earlier years of their school life by means of the von Pirquet or Moro skin test.

2—Examination of adults to whom any suspicion attaches by tuberculin, preferably the use of a single diagnostic dose hypodermically given.

3—Then, that the reacters be examined with such care as is necessary to determine the state of their lesions as to activity and location.

Such a policy would concentrate the skill of expert diagnosticians upon those in need of this service. This will gradually become the procedure among the more alert individuals. It will be considered by the community later.

An element of diagnosis is examination of all intimate contacts during the last six months of a patient's life. Every member of the household should be examined and in addition any friends and co-workers who have been thrown much with the patient in the last months of his life.

Investigations demonstrate that the incidence of the disease is greatest among members of the same household; then come co-workers in dusty trades. The dispensary nurses find that a majority of the members of a family of which one has died from consumption are

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infected at the time of such death. A large part of these spontaneously recover, oftentimes without having become aware that they were infected; others recover after a period of illness; others die. Some realize they are ill at the time of the death; others do not discover their infection until six months or a year later.

The consumption death rate among stone cutters and metal polishers is about 500 per 10,000 engaged in that occupation. Among bankers and brokers it is about 95 per 10,000. This difference between the rate of healthful and unhealthful occupations is only surpassed by one other difference, and that is the difference between the rates in infected and non-infected households. Therefore, special diagnostic procedures should be adopted among the intimate contacts of those who have recently died from consumption. Gain would follow putting the money and effort now spent on formalin fumigation into cleaning the premises and diagnosing the contacts.

The present registration method consists in:

1—Recording the case alphabetically.

2—Recording the case by street and number.

3—Making a tuberculosis spot map each month.

4—Checking the deaths from tuberculosis against the registered living cases.

This must be supplemented by a biennial registration of all tuberculous persons living in the city with an annual checking of cases and inspection of environments by the city physicians and nurses. Cases in the latter stages should be visited by the city representatives not less often than once a month, the purpose of this visit being to see that the environment is made safe for others. Centainly more than half of such cases should be hospitalized.

The control of tuberculosis demands the following:

1—Diagnosis.

2—Registration.

3—Periodic reporting.

4—Supervision of the late cases.

5—Sanatorium care of the early cases.

6—Dispensary and nursing care of the ambulatory cases.

7—Hospitalization of the late cases.

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REPORT OF

SECRETARY'S OFFICE

EDWARD R. PRITCHARD,
Secretary

S. F. MANNING,
Assistant Secretary

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PUBLICITY AND EDUCATION.

It will, perhaps, be conceded by all trained sanitarians and those engaged in public health work that education and publicity constitute its most important adjunct. The legitimate work of the Department of Health lies wholly in the field of prevention; it has nothing to do with the curing of disease, but leaves that entirely to the physician, where it properly belongs. The marvelous progress that has been made during the past two decades in controlling and stamping out the preventable diseases has been due to publicity and education more than to any other cause.

When Jenner discovered vaccination it was publicity of the fact, wide dissemination of that knowledge, that made it a blessing to mankind. When Major Reed of the U. S. Marine Hospital Service discovered that yellow fever was not contagious, but infectious, and that it was transmitted by a certain type of mosquito, the publicity of that important bit of information, more than anything else, led to the elimination of yellow fever in epidemic form in the south, and the passing of shot-gun quarantine.

In the light of the sanitary achievements of the past ten years, it may be safely postulated that when sanitary administration reaches its highest standard of efficiency there will be no more epidemics of the preventable diseases.

Less than ten years ago consumption was classed among the incurable diseases. To-day we know that it is not only curable but easily cured in the early stages. Now, physicians and sanitarians are urging all those who suspect that they may have this dread disease to obtain early diagnosis, for the reason that such diagnosis no longer means the handing of a death warrant but, on the contrary, means restoration to health.

In the world-wide fight that is now being waged against the great white plague, publicity and education are the all-important factors. It is safe to say that millions have already been spent in this campaign and millions more will be spent before this dread destroyer of human life has been stamped out.

The Department of Health for many years, dating back to the time of the late Dr. Frank W. Reilly, who as Assistant Commissioner founded the bureau and started the movement, has believed in and advocated publicity and educational methods. But it has remained for the present Commissioner to emphasize and carry out in a detailed and systematic way a campaign of this character. Almost immediately upon his accession to office he began this publicity work, which soon resulted in the organization of the present bureau of publicity and education, the activities of which may be briefly summarized as follows:

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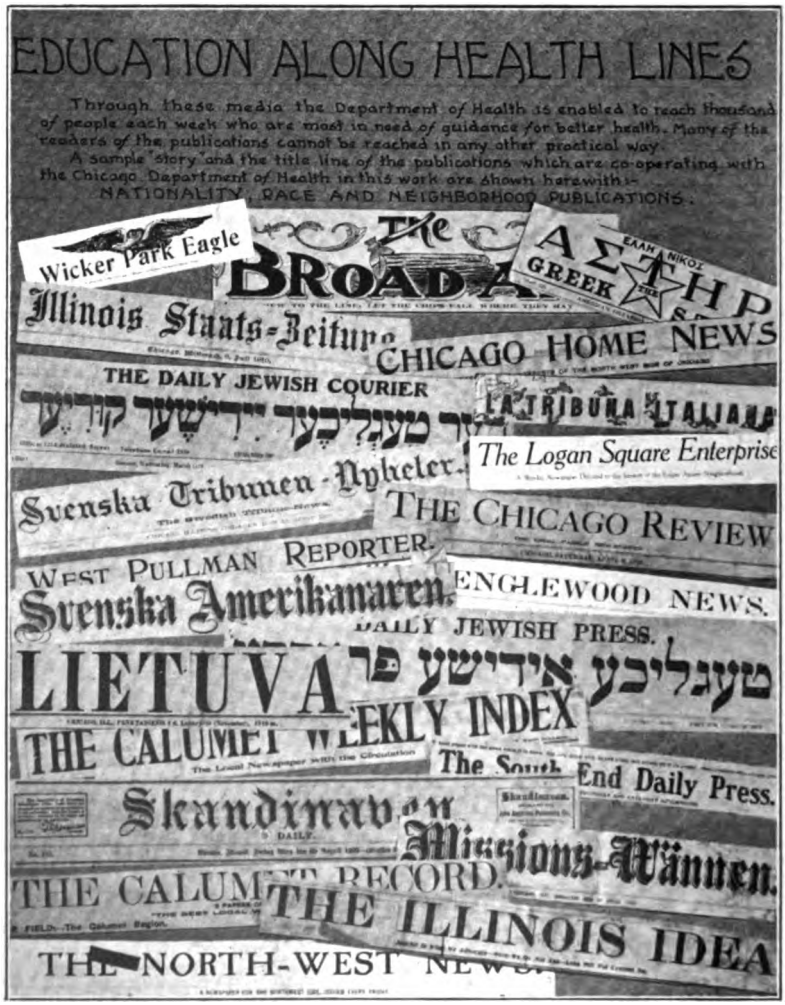
A. The organization of a lecture bureau through which speakers are furnished for the civic and religious bodies, improvement clubs and settlement organizations throughout the city. During the past three years, hundreds of " health talks" have been delivered all over the city, touching every phase of health work. Some have been illustrated with lantern slides.


EDUCATION ALONG HEALTH LINES
Through these media the Department of Health is enabled to reach thousands of people each week who are most in need of guidance for better health. Many of the readers of the publications cannot be reached in any other practical way.
A sample story and the title line of the publications which are co-operating with the Chicago Department of Health in this work are shown herewith:-
NATIONALITY, RACE AND NEIGHBORHOOD PUBLICATIONS.
Wicker Park Eagle
The BROAD
GREEK
Illinois Staats-Zeitung
CHICAGO HOME NEWS
THE DAILY JEWISH COURIER
LA TRIBUNA ITALIANA
The Logan Square Enterprise
Svenska Tribunen-Nyheter
THE CHICAGO REVIEW
WEST PULLMAN REPORTER
Svenska Amerikanaren
ENGLEWOOD NEWS
DAILY JEWISH PRESS
LIETUVA
EKLY INDEX
THE CALUMET
The South End Daily Press.
Skandinaven
Missions-Wännen
THE CALUMET RECORD
THE ILLINOIS IDEA
THE NORTH-WEST

B. The issuance of press bulletins to something like 130 publications of every class and character, many printed in foreign languages. These little "health talks", rarely exceeding three hundred words in length, have been warmly welcomed by the various editors. They have

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published them in their papers and, when of especial importance, have commented upon them editorially. This service also has been made especially effective in times of emergency, when diphtheria or scarlet fever has been prevalent or during the summer months when the baby welfare work was in progress.

C. Industrial bulletins, a weekly service gotten out for the industrial and manufacturing establishments of Chicago, for display upon their bulletin boards. These bulletins cover every phase of shop and factory sanitation and, it is believed, have been of great educational value. As a sample, the following has been distributed in thousands of shops and factories of every kind and character throughout the city:

SOME SANITARY SUGGESTIONS

FOR

SHOP, STORE AND FACTORY

Consumption is a House Disease.
It is Caused by Germs.
Do Not Spit on the Floors.
No Spit, No Consumption.
Cuspidors Should be Provided and Cleansed Daily.
Colds are Catching.
Hot Close Places with Foul Air Cause Colds and Pneumonia.
Ventilate in Cold Weather.
Get Plenty of Warmed Air.
A Hot Place Needs More Air Than a Cold One.
A Work Shop Must be Warm; Keep the Fans Going.
Dust is Dangerous.
Floors Should be Sprinkled Just Before Being Swept.
Dirt and Disease go Together.
Water Closets, Urinals and Wash Sinks Should be Kept Clean.
Live Out of Doors as Much as Possible.
Get All the Fresh Air and Sunshine You Can.
Keep the Body Clean by Frequent Bathing.
Wash the Hands Before Eating the Noonday Lunch.
Once More: Do Not Spit on the Floor.
Do Not Allow Your Shop Mates to Spit on the Floor.

DEPARTMENT OF HEALTH.

D. During the summer of 1910, the Department added to its publicity and educational bureau moving picture shows of an interesting and educational character. These were presented at many of the moving-

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picture theaters and in some of the public and parochial schools. There were two of these exhibits, one embracing two sets of films, "The Acrobatic Fly" and "The Fly Pest." This set of pictures presented in detail the life history of the common house fly and illustrated in a graphic and forceful way its unspeakably filthy habits. The second exhibit, "The Man Who Learned," presents the story of the dirty dairyman who refuses to be clean and whose dirty milk poisons his own grandson, nearly killing the little fellow; then the dairyman comes to his senses, adopts and installs sanitary methods and appliances and turns out clean, safe milk.

E. The Department has also made use of the street, elevated and steam car lines of the city in its publicity work, some of these corporations co-operating with the Department by allowing it to place placards in unused or unsold space in their cars. This space was used mainly in disseminating information regarding consumption and the other dirty-air diseases and the importance of having a clean and safe milk supply.

(PLACARDS CARRIED IN ADVERTISING SPACES IN CHICAGO STREET CARS. NECESSARY SPACE DONATED FOR THIS PURPOSE.)

CONSUMPTION CAN BE CURED

if treated in time. Most consumptives do not know they have it until too late. You may have it. Have your doctor find out NOW with a tuberculin test or otherwise before too late. The thousands of hopeless cases are due to neglect.

Fresh air prevents consumption and pneumonia. Ventilate all the time—winter and summer—day and night. "Too much fresh air is just enough."

DEPARTMENT OF HEALTH

BABY'S MILK MUST BE CLEAN

DIRTY MILK KILLS BABIES

See that the *Bottles, Cans, Wagons, Depots* and *Milkmen* are clean—IF NOT WRITE US.

LOOK FOR DIRT AT BOTTOM OF BOTTLE.
KEEP FLIES AWAY FROM MILK.

If you suspect your milk, bring sample in original package to CITY LABORATORY, 4th Floor, 215 E. Madison St.

DEPARTMENT OF HEALTH
City of Chicago.

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F. A feature of the work during the past summer in connection with the infant welfare work was the publication and posting throughout the congested areas of the city, placards printed in the Polish and Italian languages giving advice to mothers on the hot weather care of babies. It is believed that these cards were an effective aid in this important work.

G. Omission must not be made of the charts and diagrams prepared by Dr. C. St. Clair Drake of the Department, in which have been marshalled in a most telling way, facts and figures pertaining to every phase of public health work. Thousands of these illustrations have been distributed throughout the city, hung in the class rooms of the public schools and in lecture rooms of many churches. They have been greatly sought after by educational bodies throughout the English speaking world, permission having been asked by The Medical Officer published in London to reproduce, publish, and distribute certain of them.

It is gratifying to know that the Department's educational and publicity methods have attracted wide attention and favorable comment throughout the entire country. It is safe to say that during the past three years this Department has led all others in this new field of public health work.

HEALTHGRAMS.
From *The Bulletin.*

Strong drink makes weak men.

* * *

"High Balls" often cause low spirits.

* * *

Alcohol is a preservative, but not for your health.

* * *

Let hot weather be the closed season for "the growler."

* * *

Many eyes have been closed prematurely by "eye openers."

* * *

Alcohol has hammered hob-nails into many a man's liver.

* * *

Many a man feels "put out" because of what he takes in.

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SCHOOL OF SANITARY INSTRUCTION

(INCORPORATED)

FOR PRACTICAL INSTRUCTION
IN PUBLIC HYGIENE AND
SANITARY SCIENCE

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THE CHICAGO SCHOOL OF SANITARY INSTRUCTION.

The Chicago School of Sanitary Instruction, incorporated in Illinois October 1, 1909, by officials of the Department of Health, has for its object, practical instruction in public hygiene and sanitary science and in all matters pertaining to the public health by means of laboratory work and demonstration under the tuition and supervision of experts; also popular education on these subjects by means of weekly bulletins, circulars, pamphlets and other forms of publication to be distributed gratis.

THE WEEKLY BULLETIN.

The Bulletin of the Chicago School of Sanitary Instruction, published weekly, is devoted to the dissemination of advice and information of the Department of Health, the Commissioner of Health being the editor-in-chief and the Assistant Registrar of Vital Statistics the acting editor.

Each week the Bulletin contains some tersely worded "health stories" written in a popular style, devoid of technical phrase, the subjects covered and the advice presented being appropriate to the season. For instance, in the winter months we devote much space to advice on the benefits of good ventilation and the dangers of impure air; in summer we endeavor to instruct mothers in the proper care of infants, etc. In addition the Bulletin carries some statistical tabulations, such as the weekly mortality from diseases of major sanitary importance and weekly statement of contagious-disease cases reported. It not infrequently contains illustrations, a favorite style being spot maps of the city showing locations of certain communicable diseases.

This publication has a circulation of 7,500 copies, the local mailing list including all school teachers, clergymen, physicians, settlement workers, editors of daily and weekly newspapers and such other of our citizens as may be of service in spreading the gospel of health. It also goes to many health officials, sanitarians, and medical and sanitary journals throughout the world.

The favor with which this little publication has been received by the public and press is constantly in evidence. It is freely quoted, not only by the local dailies, but by the leading medical and scientific journals of our own and foreign countries. It is very generally recognized as being an excellent medium through which a health department may reach the people with timely warning and advice and also for keeping the public informed as to the character and progress of the Department's activities in its behalf.

A few words as to how the Bulletin matter is handled may be of some value. By noon of each Friday all bureau heads in the Department, excepting Vital Statistics, forward whatever matter they deem advisable to present. This is edited and typewritten in duplicate sets by Friday

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evening. By noon of Saturday the Bureau of Vital Statistics hands in its tabular statement of the week's mortality and the whole is immediately made ready for distribution. One complete set of copy goes to each of the great daily papers of Chicago which have a Sunday edition, another set of copy goes to the Bulletin printer. The Bulletin matter is set in type Saturday afternoon and galley proof is sent to the daily papers which have no Sunday editions.

The Sunday papers devote much space to a review of the Bulletin matter and the Monday evening papers likewise present it to their readers. In this manner we reach practically all of our citizens each week.

The Bulletin is printed Monday morning and is in the mail the same evening.

The following pages are devoted to reproductions of some of the posters which have been prepared for public distribution.

HEALTHGRAMS.

From *The Bulletin.*

Why eat arctic food in tropic weather?

* * *

We are an over-fed, under-slept nation.

* * *

First aid to the dyspeptic—a good laugh.

* * *

Chew your food; your stomach has no teeth.

* * *

When you don't know what to eat—eat nothing.

* * *

Cheerfulness and a sluggish liver are total strangers.

* * *

Don't permit your palate to get your stomach into trouble.

* * *

Physically, the man who overeats is no better than the man who overdrinks.

* * *

God gives us vegetables and fruits in the summer time for summer food. "Get wise."

* * *

A fat man is usually a cheerful man. He was cheerful before he was fat. (A hint to thin men.)

* * *

There would be less need for the fasting treatment if the feasting fetes were less numerous.

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WHAT SANITATION AND PREVENTIVE MEDICINE HAVE DONE FOR CHICAGO.

REDUCTION IN DEATHS FROM

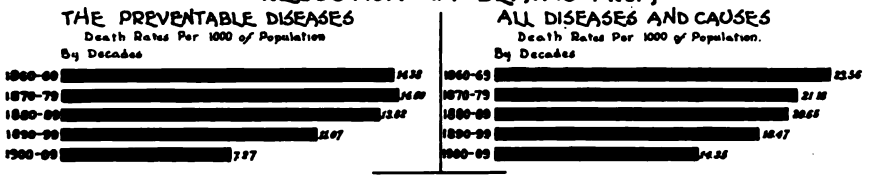
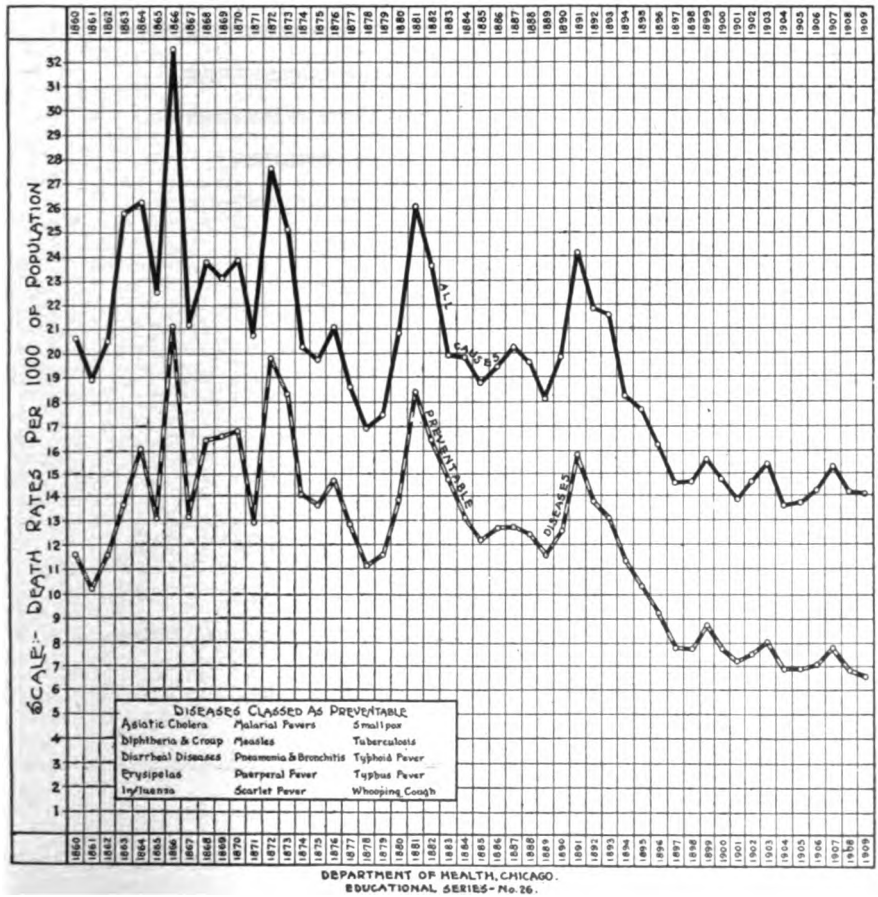


DIAGRAM SHOWING DEATH RATES BY YEARS, 1860-1909.

ALL CAUSES

PREVENTABLE DISEASES

(Diseases included in group of "Preventable Diseases" shown below)



DEPARTMENT OF HEALTH, CHICAGO.
EDUCATIONAL SERIES - No. 26.

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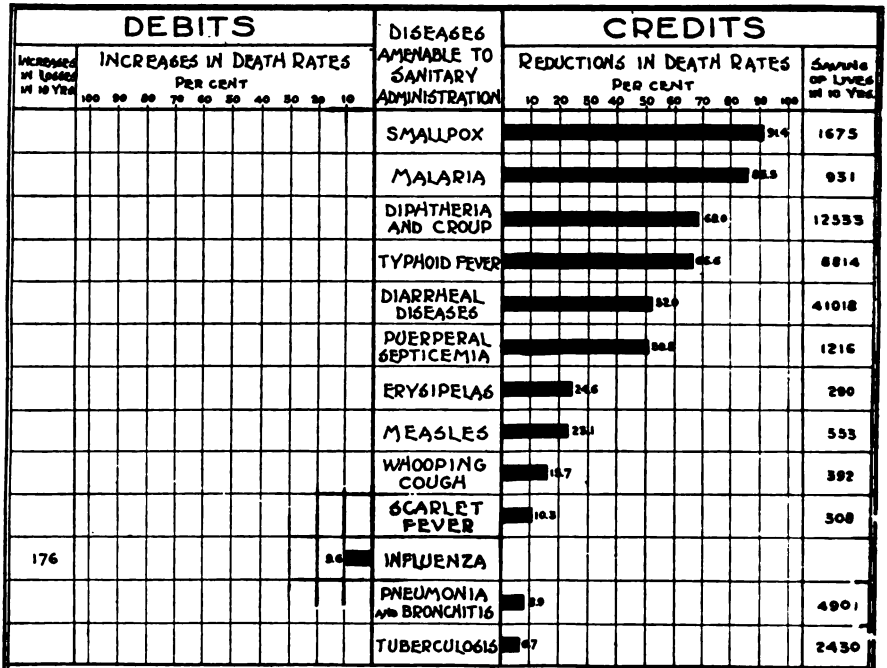
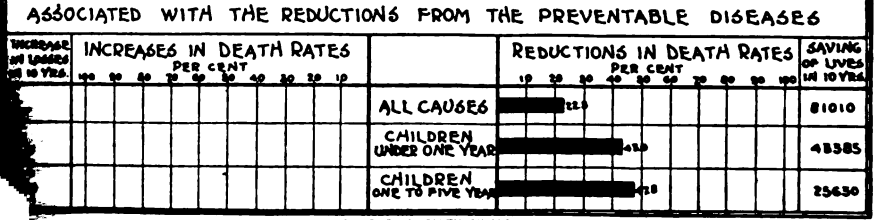
SANITARY TRIAL BALANCE

THE CITY OF CHICAGO
IN ACCOUNT WITH
THE PREVENTABLE DISEASES

LOSSES AND GAINS DURING THE LAST TEN YEARS AS COMPARED WITH THE PRECEDING DECADE


DEBITS
Increase in Losses in 10 Yrs.
Increases in Death Rates
Per Cent
100 90 80 70 60 50 40 30 20 10
Diseases Amenable to Sanitary Administration
CREDITS
Reductions in Death Rates
Per Cent
10 20 30 40 50 60 70 80 90 100
Saving of Lives in 10 Yrs.
SMALLPOX 91.6 1675
MALARIA 88.5 931
DIPHTHERIA AND CROUP 68.0 12533
TYPHOID FEVER 65.6 8814
DIARRHEAL DISEASES 52.0 41018
PUERPERAL SEPTICEMIA 50.8 1216
ERYSIPELAS 24.6 290
MEASLES 22.1 553
WHOOPING COUGH 15.7 392
SCARLET FEVER 10.3 508
176 8.6 INFLUENZA
PNEUMONIA AND BRONCHITIS 3.9 4901
TUBERCULOSIS 4.7 2430

DEVELOPMENTS IN THE GENERAL AND INFANT DEATH RATES ASSOCIATED WITH THE REDUCTIONS FROM THE PREVENTABLE DISEASES


Increase in Losses in 10 Yrs.
Increases in Death Rates
Per Cent
100 90 80 70 60 50 40 30 20 10
Reductions in Death Rates
Per Cent
10 20 30 40 50 60 70 80 90 100
Saving of Lives in 10 Yrs.
ALL CAUSES 22.9 81010
CHILDREN UNDER ONE YEAR 43.9 48385
CHILDREN ONE TO FIVE YEARS 47.8 25630

DEPARTMENT OF HEALTH, CHICAGO
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DIPHTHERIA IN CHICAGO
BEFORE AND AFTER ANTITOXIN

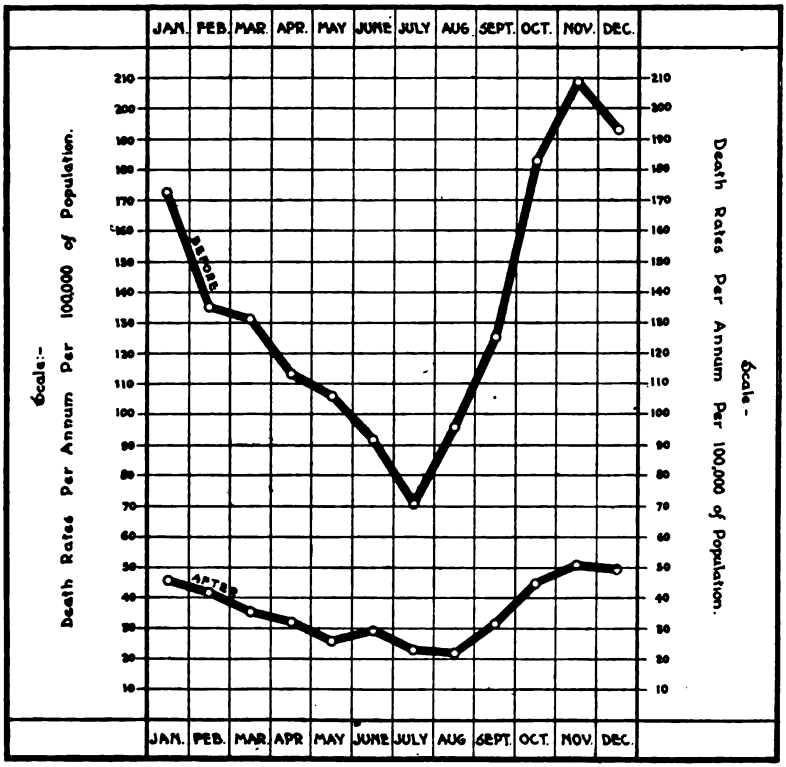
COMPARING THE AVERAGE DEATH RATES OF TWO 14-YEAR PERIODS
BEFORE ~ 1882-1895 ; AFTER ~ 1896-1909.

BEFORE 136

AFTER 36

The 73½ percent reduction in the death rate is equivalent to a saving of 25,678 lives in the fourteen years in which diphtheria antitoxin has been used.

AVERAGE MONTHLY DEATH RATES FROM DIPHTHERIA AND CROUP
IN THE TWO FOURTEEN-YEAR PERIODS.



DEPARTMENT OF HEALTH, CHICAGO.
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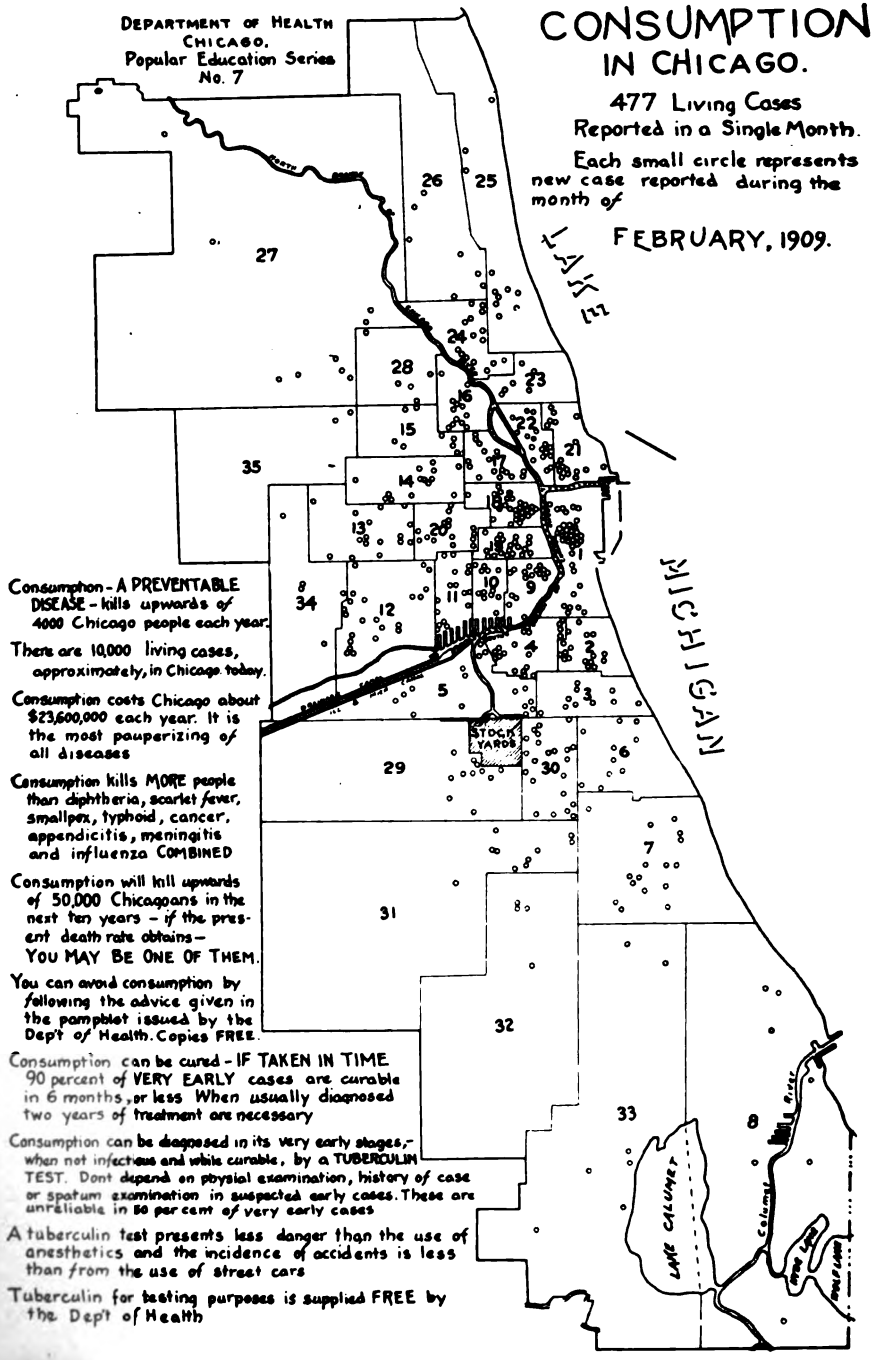
DEPARTMENT OF HEALTH
CHICAGO.
Popular Education Series
No. 7
CONSUMPTION
IN CHICAGO.
477 Living Cases
Reported in a Single Month.
Each small circle represents a new case reported during the month of
FEBRUARY, 1909.
LAKE MICHIGAN
STOCK YARDS
LAKE CALUMET
Consumption - A PREVENTABLE DISEASE - kills upwards of 4000 Chicago people each year.
There are 10,000 living cases, approximately, in Chicago today.
Consumption costs Chicago about $23,600,000 each year. It is the most pauperizing of all diseases
Consumption kills MORE people than diphtheria, scarlet fever, smallpox, typhoid, cancer, appendicitis, meningitis and influenza COMBINED
Consumption will kill upwards of 50,000 Chicagoans in the next ten years - if the present death rate obtains - YOU MAY BE ONE OF THEM.
You can avoid consumption by following the advice given in the pamphlet issued by the Dep't of Health. Copies FREE.
Consumption can be cured - IF TAKEN IN TIME
90 percent of VERY EARLY cases are curable in 6 months, or less When usually diagnosed two years of treatment are necessary
Consumption can be diagnosed in its very early stages, - when not infectious and while curable, by a TUBERCULIN TEST. Dont depend on physical examination, history of case or sputum examination in suspected early cases. These are unreliable in 50 per cent of very early cases
A tuberculin test presents less danger than the use of anesthetics and the incidence of accidents is less than from the use of street cars
Tuberculin for testing purposes is supplied FREE by the Dep't of Health

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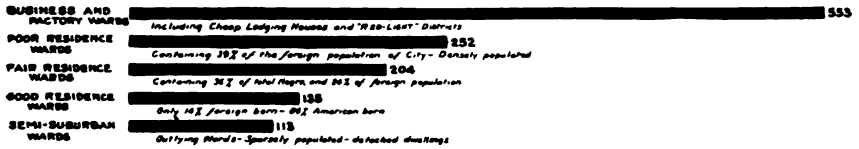
TUBERCULOSIS IN CHICAGO

CASES REPORTED DURING THE YEAR OF 1909 — BY WARDS

Number of cases developed in each 100,000 of population

WARDS GROUPED AS TO THEIR GENERAL SANITARY CHARACTER


BUSINESS AND FACTORY WARDS
553
Including Cheap Lodging Houses and "RED-LIGHT" Districts
POOR RESIDENCE WARDS
252
Containing 39% of the foreign population of City - Densely populated
FAIR RESIDENCE WARDS
204
Containing 26% of total Negro, and 20% of foreign population
GOOD RESIDENCE WARDS
135
Only 14% foreign born - 86% American born
SEMI-SUBURBAN WARDS
113
Outlying Wards - Sparsely populated - detached dwellings

RATIO OF CASES TO POPULATION IN EACH CITY WARD
DENSITY OF POPULATION AND GENERAL SANITARY CHARACTER

Ward	New cases developed in each 100,000 inhabitants (50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800)	Number of Inhabitants Per Acre	General Sanitary Character of Ward
1	791.8	22	Bad
2	307.6	59	Fair
3	210.8	51	Good
4	232.6	55	Bad
5	171.8	26	Bad
6	110.4	47	Good
7	122.9	22	Good
8	127.3	5	Bad
9	321.8	68	Bad
10	236.1	80	Bad
11	272.0	83	Bad
12	185.3	31	Fair
13	144.4	37	Good
14	213.9	43	Fair
15	164.8	84	Fair
16	184.4	85	Bad
17	268.2	80	Bad
18	552.4	45	Bad
19	359.6	78	Bad
20	206.8	75	Fair
21	268.2	54	Fair
22	268.3	55	Bad
23	160.8	39	Fair
24	171.2	47	Fair
25	104.3	23	Good
26	117.7	15	Good
27	123.1	5	Good
28	132.2	38	Fair
29	226.8	12	Bad
30	264.2	43	Bad
31	128.9	7	Good
32	98.4	8	Good
33	102.4	5	Fair
34	118.1	10	Fair
35	115.6	12	Good

DEPT OF HEALTH, CHICAGO.
EDUCATIONAL SERIES-No 18.

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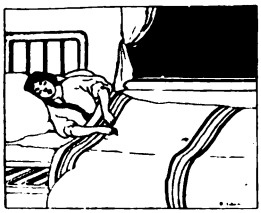
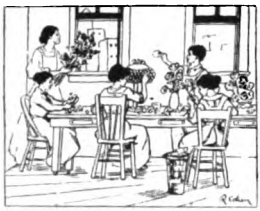
Which Way Are You Going?

To Good Health and Long Life



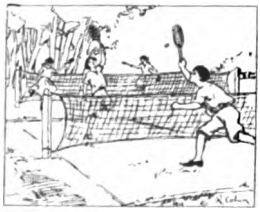
Sleep With the Windows Open

Clean Air
Pure Blood
Good Health



Work and Study in Pure Air

Pure Air
Makes Mind
and Body Alert



Play in the Clean Open Air

Keep Out
of Doors as
Much as Possible

Eat Clean, Nourishing Food

Keep
Flies and Dust
Away from Food

To Consumption and Early Death

Closed Windows Mean Dirty Air

Dirty Air
Poisoned Blood
Death

Dirty, Dusty, Hot Rooms are Killing

Destructive to
Health and
Efficiency

Indoor Play and Play in Dusty Places is Not Healthful Play

Exercise
in Dirty Air
is Dangerous

Dirty Food Kills Thousands

Flies
and Dust
Contaminate Food

NEVER DO THESE THINGS

Don't spit in public places; no spit no consumption.
Don't "swap" gum, apples, etc. There's spit on used gum.
Don't put pencils or money in mouth; there's spit on pencils and filth on money.
Don't eat candy, fruit or pastry that has been exposed to flies or dust; there are all kinds of germs on such.
Don't sneeze or cough in another's face.
Don't let others infect you this way.

This is a reproduction of a large poster, size 4x5 feet, which was prepared and distributed by the Chicago Woman's Aid, co-operating with the Department of Health. Copies of this poster are now hanging in every public school throughout the city.

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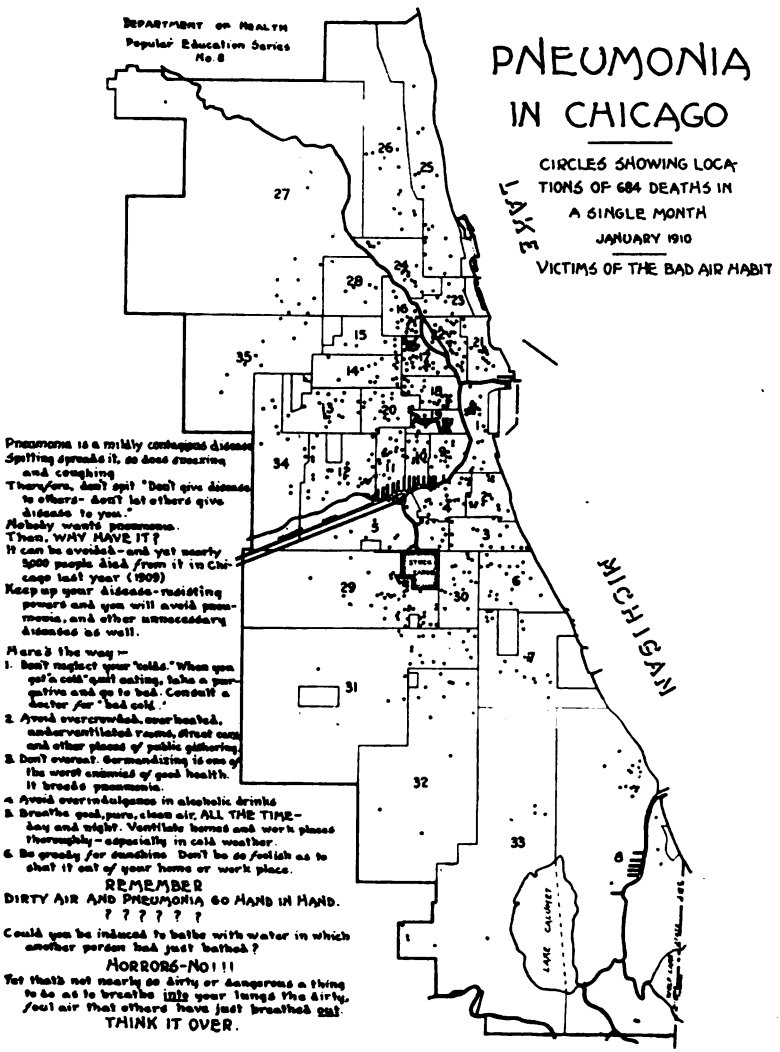
DEPARTMENT OF HEALTH
Popular Education Series
No. 8
PNEUMONIA
IN CHICAGO
CIRCLES SHOWING LOCATIONS OF 684 DEATHS IN A SINGLE MONTH
JANUARY 1910
VICTIMS OF THE BAD AIR HABIT
LAKE
MICHIGAN
Pneumonia is a mildly contagious disease. Spitting spreads it, so does sneezing and coughing
Therefore, don't spit. Don't give disease to others- don't let others give disease to you."
Nobody wants pneumonia.
Then, WHY HAVE IT?
It can be avoided- and yet nearly 9000 people died from it in Chicago last year (1909)
Keep up your disease-resisting powers and you will avoid pneumonia, and other unnecessary diseases as well.
Here's the way —
1. Don't neglect your "colds." When you get a cold" quit eating, take a purgative and go to bed. Consult a doctor for "bad cold."
2. Avoid overcrowded, overheated, undersentilated rooms, street cars and other places of public gathering.
3. Don't overeat. Gormandizing is one of the worst enemies of good health. It breeds pneumonia.
4. Avoid overindulgence in alcoholic drinks
5. Breathe good, pure, clean air, ALL THE TIME- day and night. Ventilate homes and work places thoroughly- especially in cold weather.
6. Be greedy for sunshine. Don't be so foolish as to shut it out of your home or work place.
REMEMBER
DIRTY AIR AND PNEUMONIA GO HAND IN HAND.
? ? ? ? ? ?
Could you be induced to bathe with water in which another person had just bathed?
HORRORS-NO!!!
Yet that's not nearly so dirty or dangerous a thing to do as to breathe into your lungs the dirty, foul air that others have just breathed out.
THINK IT OVER.

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"THE DOUBLE CROSS"

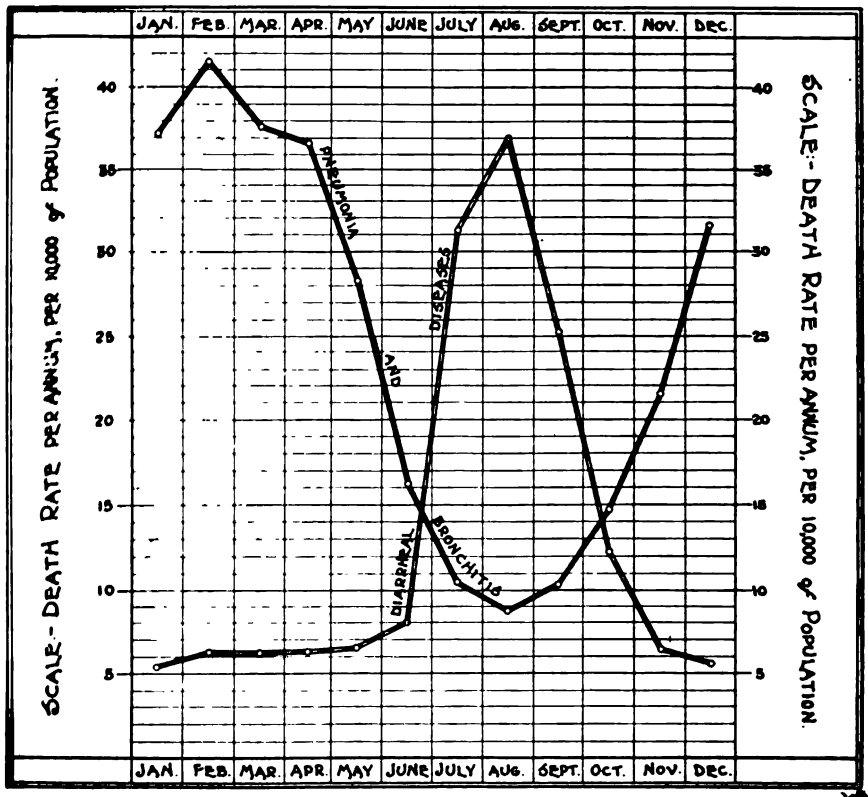
GIVEN CHICAGOANS

BY THE IMPURE AIR AND THE IMPURE FOOD DISEASES

MONTHLY DEATH RATES FROM TWO GROUPS OF DISEASES THAT ARE INDIRECTLY AFFECTED BY WEATHER CONDITIONS.

IMPURE AIR DISEASES — PNEUMONIA AND BRONCHITIS — HIGH in Winter when people house themselves up and breathe the foul air of overheated, unventilated rooms LOW in Summer when people keep the doors and windows open, and pass most of their time in the open air

IMPURE FOOD DISEASES — THE DIARRHEAL AFFECTIONS — HIGHEST in hot weather — especially among babies — chiefly because the heat makes dirty milk more dangerous, and because heat spoils, and flies, dust, etc., contaminate the food we eat.



DEPARTMENT OF HEALTH, CHICAGO.
EDUCATIONAL SERIES-No.34.

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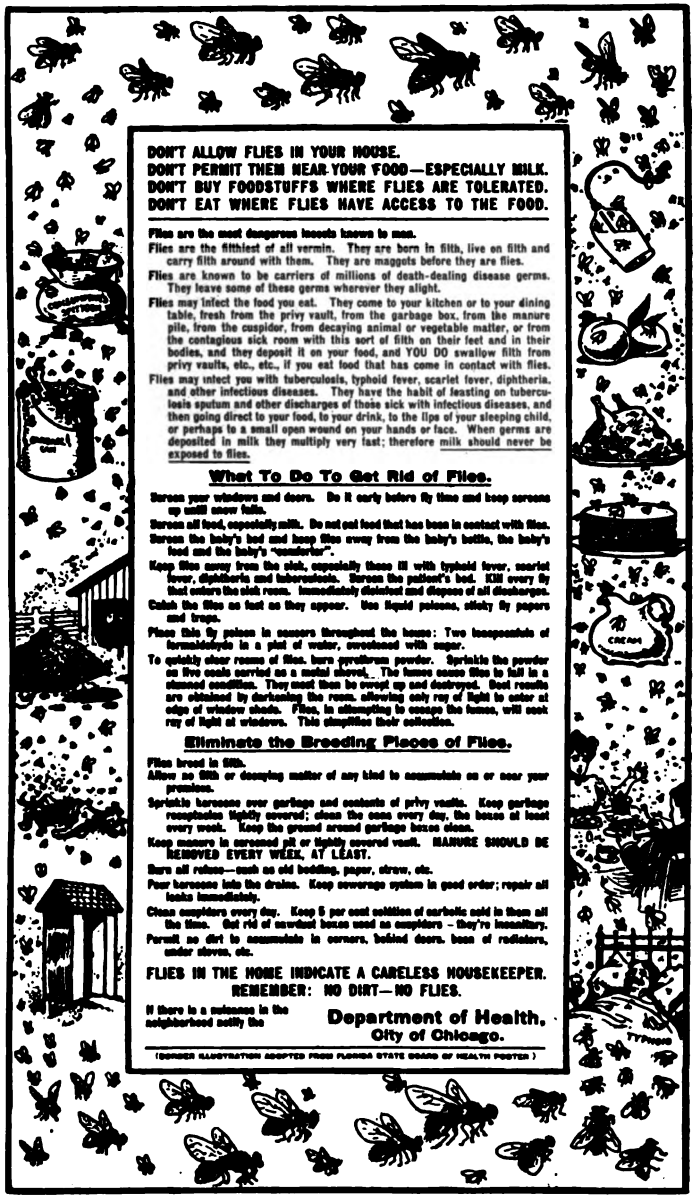
SPEAKING OF FLIES!!



DON'T ALLOW FLIES IN YOUR HOUSE.
DON'T PERMIT THEM NEAR YOUR FOOD—ESPECIALLY MILK.
DON'T BUY FOODSTUFFS WHERE FLIES ARE TOLERATED.
DON'T EAT WHERE FLIES HAVE ACCESS TO THE FOOD.

Flies are the most dangerous insects known to man.

Flies are the filthiest of all vermin. They are born in filth, live on filth and carry filth around with them. They are maggots before they are flies.

Flies are known to be carriers of millions of death-dealing disease germs. They leave some of these germs wherever they alight.

Flies may infect the food you eat. They come to your kitchen or to your dining table, fresh from the privy vault, from the garbage box, from the manure pile, from the cuspidor, from decaying animal or vegetable matter, or from the contagious sick room with this sort of filth on their feet and in their bodies, and they deposit it on your food, and YOU DO swallow filth from privy vaults, etc., etc., if you eat food that has come in contact with flies.

Flies may infect you with tuberculosis, typhoid fever, scarlet fever, diphtheria, and other infectious diseases. They have the habit of feasting on tuberculosis sputum and other discharges of those sick with infectious diseases, and then going direct to your food, to your drink, to the lips of your sleeping child, or perhaps to a small open wound on your hands or face. When germs are deposited in milk they multiply very fast; therefore milk should never be exposed to flies.

What To Do To Get Rid of Flies.

Screen your windows and doors. Do it early before fly time and keep screens up until snow falls.

Screen all food, especially milk. Do not eat food that has been in contact with flies.

Screen the baby's bed and keep flies away from the baby's bottle, the baby's food and the baby's "comforter".

Keep flies away from the sick, especially those ill with typhoid fever, scarlet fever, diphtheria and tuberculosis. Screen the patient's bed. Kill every fly that enters the sick room. Immediately disinfect and dispose of all discharges.

Catch the flies as fast as they appear. Use liquid poisons, sticky fly papers and traps.

Place this fly poison in saucers throughout the house: Two teaspoonfuls of formaldehyde in a pint of water, sweetened with sugar.

To quickly clear rooms of flies, burn pyrethrum powder. Sprinkle the powder on live coals carried on a metal shovel. The fumes cause flies to fall in a stunned condition. They must then be swept up and destroyed. Best results are obtained by darkening the room, allowing only ray of light to enter at edge of window shade. Flies, in attempting to escape the fumes, will seek ray of light at window. This simplifies their collection.

Eliminate the Breeding Places of Flies.

Flies breed in filth.

Allow no filth or decaying matter of any kind to accumulate on or near your premises.

Sprinkle kerosene over garbage and contents of privy vaults. Keep garbage receptacles tightly covered; clean the cans every day, the boxes at least every week. Keep the ground around garbage boxes clean.

Keep manure in screened pit or tightly covered vault. MANURE SHOULD BE REMOVED EVERY WEEK, AT LEAST.

Burn all refuse—such as old bedding, paper, straw, etc.

Pour kerosene into the drains. Keep sewerage system in good order; repair all leaks immediately.

Clean cuspidors every day. Keep 5 per cent solution of carbolic acid in them all the time. Get rid of sawdust boxes used as cuspidors – they're insanitary.

Permit no dirt to accumulate in corners, behind doors, base of radiators, under stoves, etc.

FLIES IN THE HOME INDICATE A CARELESS HOUSEKEEPER.
REMEMBER: NO DIRT—NO FLIES.

If there is a nuisance in the neighborhood notify the

Department of Health,
City of Chicago.

(BORDER ILLUSTRATION ADOPTED FROM FLORIDA STATE BOARD OF HEALTH POSTER)

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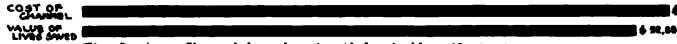
FIFTY YEARS OF TYPHOID FEVER IN CHICAGO
WITH SANITARY MEMORANDA:—1860-1909.

The supreme effort of Chicago to rid itself of Typhoid was the construction of the drainage channel and the intercepting sewer system—diverting the city's sewage from the source of its water supply. The Drainage Channel was opened, January 17, 1900—ten years ago.

COMPARING THE TYPHOID DEATH RATES OF TWO 10-YEAR PERIODS "BEFORE" AND "AFTER" OPENING OF DRAINAGE CHANNEL.

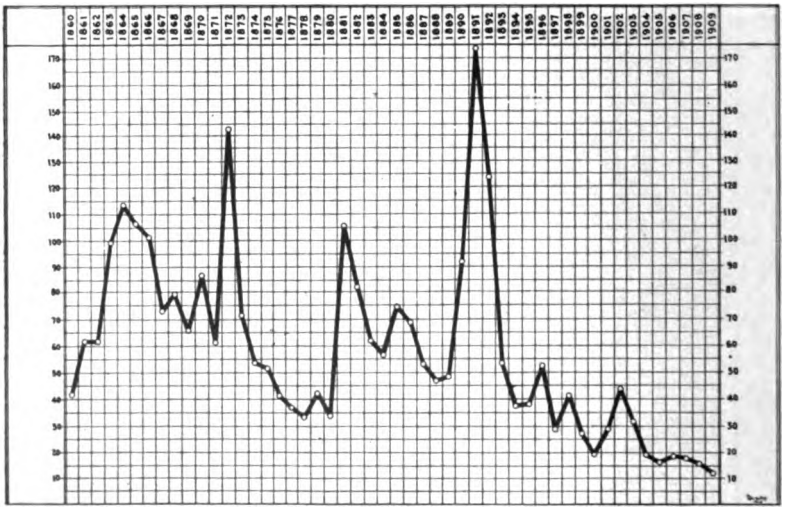
The 66.6 per cent reduction means a saving of 8814 lives in the last 10 years.

MONEY VALUE OF THE LIVES SAVED COMPARED WITH COST OF CONSTRUCTION AND MAINTENANCE OF DRAINAGE CHANNEL



The Drainage Channel has almost paid for itself in 10 years.

TYPHOID FEVER DEATH RATES—BY YEARS.
RATES PER 100,000 OF POPULATION — 1860-1909.

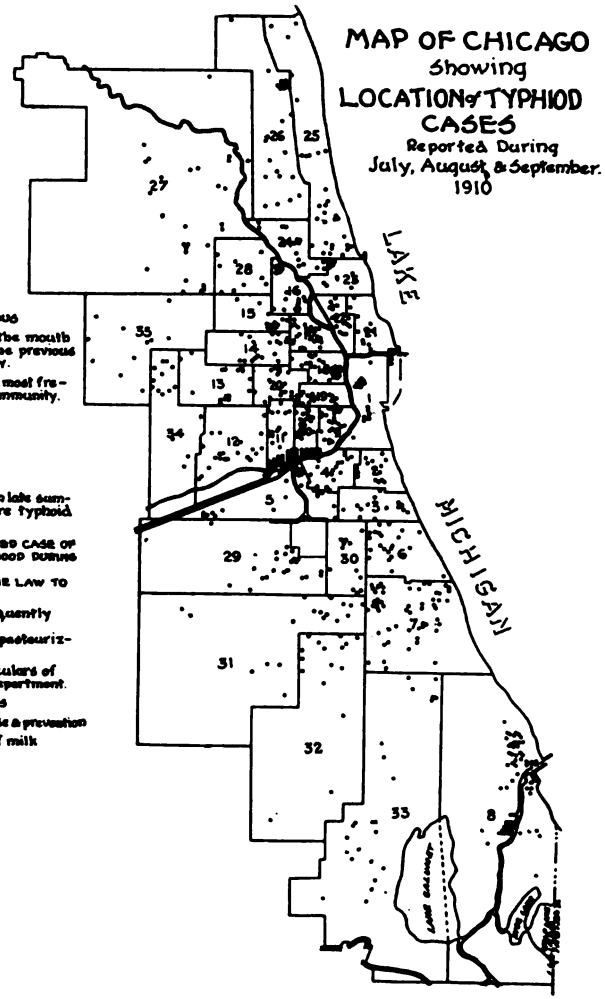


Sanitary Memoranda.

TYPHOID FEVER-THE FILTH DISEASE.

857 Cases in Chicago in Three Months

THE TYPHOID CHAIN OF F's



Typhoid Fever is Contagious

It is caused by taking into the mouth the discharges from some previous case, AND IN NO OTHER WAY.

Flies and Fingers are the most frequent spreaders in this community.

Flies are most numerous in late summer and early fall.— So are typhoid fever cases.

Never Allow an Unscreened case of Typhoid in your Neighborhood during Fly Time.

Report this violation of the law to the Health Department

Milk is the food most frequently poisoned with Typhoid. You can make milk safe by pasteurizing it at home.

Get copies of the following circulars of instruction at the Health Department.

(a) How to get rid of flies

(b) Typhoid Fever- its cause & prevention

(c) Home pasteurization of milk

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A LOCALIZED EPIDEMIC OF TYPHOID FEVER DUE TO AN INFECTED MILK SUPPLY

HERMAN SCHROEDER'S
DAIRY FARM
HARTSDALE, IND.

3 CASES OF TYPHOID FEVER
ON THIS DAIRY FARM IN SEPTEMBER AND OCTOBER, 1908.
WIFE ACTED AS NURSE AND AT SAME TIME ATTENDED TO CANNING of MILK

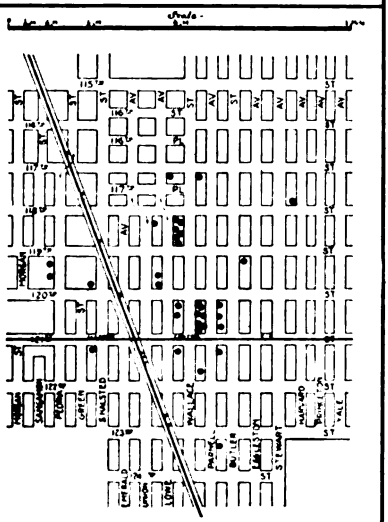
TYPHOID-INFECTED MILK SHIPPED FROM THIS FARM
TO A MILK DEALER IN THE
WEST PULLMAN DISTRICT, CHICAGO.

INFECTED MILK TO W. PULLMAN.

SHIPMENT STOPPED OCT. 13.

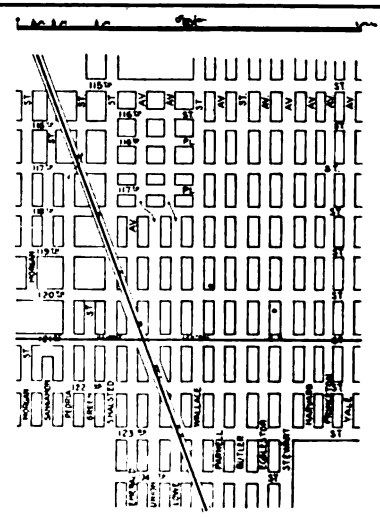
THE RESULT

33 CASES OF TYPHOID FEVER DEVELOPED AMONG RESIDENTS OF WEST PULLMAN DURING MONTH OF OCTOBER, 1908.



THE RESULT

ONLY 1 NEW CASE OF TYPHOID WAS REPORTED IN THIS DISTRICT IN NOVEMBER, 1908, THE INFECTED MILK SUPPLY HAVING BEEN STOPPED OCT. 13, 1908.



DEPARTMENT OF HEALTH, CHICAGO.
EDUCATIONAL SERIES—No. 13

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A LOCALIZED EPIDEMIC OF TYPHOID FEVER DUE TO AN INFECTED MILK SUPPLY

BOERSMA'S
DAIRY FARM
GREENWOOD, ILL.

4 CASES OF TYPHOID FEVER
ON THIS DAIRY FARM IN MARCH AND APRIL, 1908.

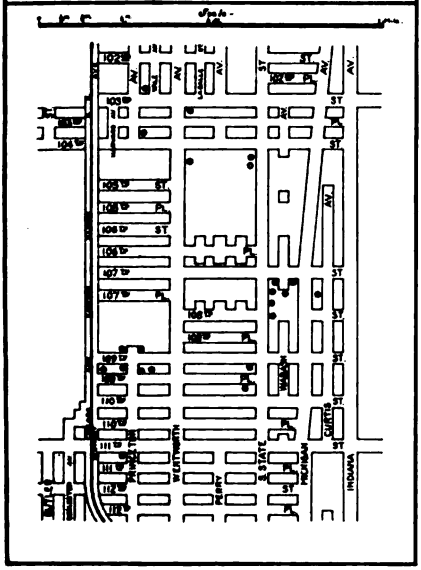
TYPHOID-INFECTED MILK SHIPPED FROM THIS FARM TO DEALERS IN THE ROSELAND DISTRICT, CHICAGO.

INFECTED MILK TO ROSELAND.

SHIPMENT STOPPED MAY 9.

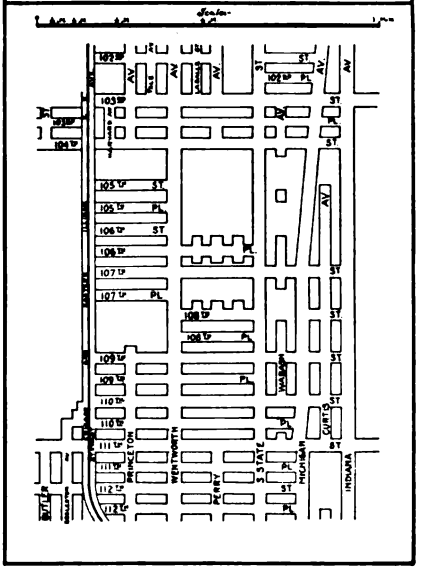
THE RESULT

22 CASES OF TYPHOID FEVER DEVELOPED IN THE ROSELAND DISTRICT DURING MONTH OF MAY, 1908.- TYPHOID-INFECTED MILK WAS SUPPLIED TO RESIDENTS OF THIS DISTRICT IN MARCH AND APRIL.



THE RESULT

NOT A SINGLE NEW CASE WAS REPORTED IN THIS DISTRICT DURING THE MONTH OF JUNE, 1908, THE INFECTED MILK SUPPLY HAVING BEEN STOPPED MAY 9, 1908.



DEPARTMENT OF HEALTH, CHICAGO.
EDUCATIONAL SERIES-No. 14.

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REPORT OF

BUREAU OF CONTAGIOUS DISEASES

1907-1910

DR. HEMAN SPALDING
Chief Medical Officer

DR. I. D. RAWLINGS
Asst. Chief Medical Officer

DR. HYMAN COHEN
Asst. Chief Medical Officer

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CONTROL OF CONTAGIOUS DISEASES.

The methods of control and management of the principal contagious diseases, as practiced by the Chicago Department of Health, are as follows:

A city ordinance requires doctors, parents or guardians to report contagious diseases to the Department of Health within twenty-four hours after seeing the patient. Diphtheria, scarlet fever, measles, whooping cough, chickenpox and smallpox must be reported both by telephone and by postal card. The other reportable diseases require a card only. The ordinance requires that a case suspected of being contagious must be reported. The Department furnishes free to all physicians a postal card upon which to make such reports. (Form 1-C.D.)

(Form 1—C. D.—Postal)

H. D. 20

SEPARATE REPORT REQUIRED FOR EACH CASE IN FAMILY

In case of Diphtheria if diagnostic culture has not been taken, a Medical Inspector will be sent to take one.

Has Culture been taken? ..... Chicago, ... 191....

I hereby report a case of ..... (Give name of Disease)

at ..... (Be sure that address of patient is correctly and fully stated) Near ..... (Give nearest cross street)

Name of Patient ..... (Name in full)

Age ..... Years ..... Mos. How long been sick? .....

This case { is / is not } connected with a place of business. Kind of business .....

If Tuberculosis — Is inspection of premises desired? .....

If Chickenpox — State if patient has vaccination scar .....

Attending Physician ..... M. D.

Physician's Address ..... Phone .....

ORDINANCE REQUIRES THAT FOLLOWING DISEASES BE REPORTED:

Acute Anterior Polio-Myelitis (Infantile Paralysis), Pneumonia, Cerebro-Spinal Fever, Chickenpox, Diphtheria, Measles, German Measles, Mumps, Membranous Croup, Erysipelas, Puerperal Septicemia, Scarlet Fever, Smallpox, Typhoid Fever, Tuberculosis, Whooping Cough, or any other disease designated as contagious or epidemic.

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A report of a case, diphtheria for example, at the Department is acknowledged by a return postal card (Form 2-C.D.). One-half of this card is to be torn off and returned to the Department of Health when the case is ready for termination. (Form 3-C.D.)

(Form 2—C. D.—Double Postal Form)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

Doctor:—

Your report of Contagious Disease, at address named on accompanying Reply Postal Card is received.

As the Principal of the School attended by the patient or children of the family will not admit to school any one from the house until permission is given by this DEPARTMENT, you will kindly mail the Reply Postal Card when the case can safely be terminated. The Department will then take cultures (in Diphtheria), disinfect the premises and remove the warning card.

W. A. EVANS, M. D.
Commissioner of Health.

(Form 3—C. D.—The Return Portion)

TO BE SIGNED BY THE ATTENDING PHYSICIAN, DATED AND RETURNED WHEN THE CASE IS READY FOR TERMINATION.

CHICAGO,___ _____ 191___

IN DIPHTHERIA two microscopical examinations must be made showing absence of diphtheria germs on two consecutive days and one negative culture obtained from contacts, before the Department can disinfect and terminate the quarantine. We advise awaiting at least two weeks in mild cases and three in severe cases from date of on-set before mailing this card. A medical inspector will then be sent to take cultures for the purpose of terminating the case.

IN SCARLET FEVER it is not safe to terminate until desquamation is completed and there is absence of discharge from the nose, throat, ears, suppurating glands or inflammation of kidneys. We advise waiting six weeks or longer, if any of the above named conditions persist, before mailing this card

THE CASE OF CONTAGIOUS DISEASE

In the family of_____

living at_____ is ready for termination.

After disinfection members of the family—including school children, if any—should be relieved from further restriction.

_____ M. D

The name and address of the patient is then telephoned from the Department to the medical health officer in whose territory the case is found. His duty is to establish a quarantine and take such other measures as are necessary to protect the public health. If the attending physician has not stated on the reporting card that he has taken a throat culture from the patient, the health officer must take one and send it to the municipal laboratory for examination. The health officer then inquires if the other members of the household have had immunizing doses of antitoxin. If not, it is his duty to immunize them. He then gives the family verbal and printed instructions as to the management of the case in order to prevent the spread of contagion.

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A card of printed instructions is hung on the door of the patient's room. The health officer endeavors to place the patient in a room apart from other members of the family in an effort to prevent other inmates of the house from contracting the disease.

(POSTER HUNG ON DOOR OF PATIENT'S ROOM)

INMATES OF THE HOUSE MUST STAY INDOORS

READ THIS!

TACK THIS UP INSIDE OF THE HOUSE

DIPHTHERIA

The disease is always dangerous and easily given to others. It is "catching" from the mildest cases. Those not sick enough to be in bed give the disease to others oftener than the very sick.

Diphtheria patients must not leave the house until the Department of Health finds the throat and nose free from diphtheria germs and **has disinfected the house.**

Keep the patient in one room. No one but the doctor and necessary attendants should be allowed to visit the patient. It is against the law to do so.

Persons living where there is **a case of diphtheria** will not be allowed to go in and out of the house. They must either stay in the house all the time, or room and board away from home all the time, until the Department of Health takes down the warning card.

Visitors will not be allowed to enter the house.

Groceries and **milk** must be left at the door.

Everything—letters, laundry, bedding, books, magazines, papers and clothing—**must be disinfected** before they are taken out of the house.

Everything used in the sick room, such as knives, forks, spoons, dishes, books, playthings, handkerchiefs, towels, sheets, pillowslips, clothing, flowers, and remnants of food must be **put in a disinfectant solution** before taken from the room.

Do not let the patient **spit** on the floor. Spit and nose discharges will give the disease to others, and should be caught on cloths and put into a strong disinfectant solution or burned.

Do not kiss the patient. After touching the patient wash your hands.

School children and others **must stay at home.** No one is allowed to go to church, Sunday school, or to other public places. The placards on the doors must not be taken down by any one except a health officer. It is against the law to do so.

No matter how well the patient may look or feel, until the Department of Health has **disinfected the house** and taken down the warning sign, the patient must be kept away from others.

If these rules are not obeyed the patient will be taken to the hospital.

READ THE CIRCULAR UPON DIPHTHERIA

You must not allow visitors to enter the house

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A pamphlet giving detailed information for the management of a case of diphtheria is given to the parent or attendant.

The health officer places a warning sign on the front door and a milkman's warning card on the rear door, reduced copies of which are herewith shown. These warning cards are printed in the various languages.

(WARNING CARD PLACED ON FRONT DOOR—REDUCED)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

DIPHTHERIA

All persons, not occupants of this apartment, are hereby notified of the presence of DIPHTHERIA within, and are warned not to enter.

The person having Diphtheria and and all others living in this home must not leave the apartment until this warning sign has been removed by the Department of Health.

Any person who shall violate the above rules or conceal, deface, alter, mutilate, destroy or remove this notice, is liable to a fine of $10.00 to $200.00.

By order of

W. A. EVANS, M. D.,

Commissioner of Health.

Date,_____191___

(WARNING CARD PLACED ON BACK DOOR—REDUCED)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

NOTICE TO THE MILKMAN

THERE IS A

CONTAGIOUS DISEASE HERE

The Milkman must not enter the house.

The family will set vessels outside, into which the milk and cream must be poured by the Milkman, who MUST NOT HANDLE THE VESSELS.

Milk or cream may be delivered in bottles, provided the bottles received are not returned to the Milkman until this notice is removed by the Department of Health.

Any person who shall violate the above rules or conceal, deface, alter, mutilate, destroy or remove this notice, is liable to a fine of $10.00 to $200.00.

By order of

W. A. EVANS, M. D.,

Commissioner of Health.

Date,_____191___

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The health officer then fills out a blank card (Form 4-C.D.), giving the quarantine officer, who follows him, information and instructions as to the quarantine requirements in the case. This card is slipped under the right upper corner of the front door warning card when the latter is posted and a tack driven through both.

(Form 4—C. D.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

QUARANTINE

Address of Premises ..... Floor ..... { Room / Flat / House } { Front / Rear }

Name of Patient .....

Disease ..... Number of Persons in family ..... How many sick? .....

Where is Warning Placard posted? ..... Where is Milk Placard posted? .....

In case in any way connected with place of business? .....

Designate location of rooms occupied by patient .....

If any at work, what precautions are taken in respect to meals, sleeping quarters, etc.? .....

How are patients and attendant isolated? .....

Where is washing done? ..... Is quarantine good, fair or bad? .....

Remarks .....

Note ..... 191 ..... Medical Inspector.

The health officer then fills out and mails a postal card (Form 5-C.D.), notifying the school, Sunday school and factories in the vicinity of the case of the presence of diphtheria in the neighborhood, giving the exact location.

(Form 5—C. D.—Postal Card)

THE PRINCIPAL CHICAGO, ... 191 .

..... SCHOOL:

THE HEALTH DEPARTMENT has just learned of the existence of a case of **Diphtheria, Measles, Scarlet Fever, Whooping Cough, Smallpox, Chickenpox, Mumps, German Measles,**

in the family of .....

living at .....

in the vicinity of your School.

For the protection of your pupils you are hereby authorized to exclude from school attendance, and from the buildings and grounds under your charge, all persons of said family.

The following named must also be excluded from school on account of unsafe proximity to the infection.

.....

.....

.....

.....

The exclusion must be maintained until you are notified by the DEPARTMENT that the disease has terminated and that the premises have been disinfected.

Respectfully,

W. A. EVANS, M. D., Commissioner of Health.

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Finally, the health officer fills out his report blank (Form 6-C.D.), giving detailed information as to the conditions and requirements in the case, and mails it to the Department of Health.

(Form 6—C. D.)

DEPARTMENT OF HEALTH — CITY OF CHICAGO

DAILY REPORT OF MEDICAL INSPECTOR

Residence..... over ..... { Room / Flat / House } { Front / Rear } { How / Many / Rooms }

Nearest cross street..... Phone of patient.....

Name of patient..... Age ..... How many days sick?.....

Disease..... Number of persons in family..... How many sick?.....

Name of attending physician.....

Address of attending physician..... Date of physician's first call.....

Where are workers from the house employed?.....

(Give name of firm and address)

Name and address of milkman. If bought from a store, who supplies the store?.....

Are there other cases in same building?..... Is case in any way connected with place of business?.....

Give probable source of infection, if possible?.....

Where is Toilet?..... Do others use it?.....

If sanitary conditions are bad, fill out and mail in special blank. If a case of chickenpox, is patient vaccinated?.....

Date { Assignment..... / Inspection..... } 191

Over

Medical Inspector

(Form 6—C. D.—Reverse Side)

Should patient go to hospital?..... Willing..... Unwilling.....

Reason for removal to hospital.....

Have you taken a culture?..... Have you injected antitoxin?..... Names of those injected and amount used.....

Names of those living at this number excluded from school.....

Names of school, Sunday school or others notified.....

Give school room number attended.....

Location of rooms occupied by patient, and how are patient and attendant isolated.....

Where is washing done..... How is household refuse disposed of?.....

If any at work, what precautions are taken in respect to meals, lodging?.....

What have you done to safeguard public and business connected with case?.....

Where are placards posted?..... Is quarantine good, fair, or poor?

On the following day the quarantine officer calls and secures the instruction card which was placed under the warning card on the front door by the health officer. This card informs him what the quarantine

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requirements are in the case. It is his duty to visit the case daily or as often as necessary and see that the inmates observe the rules of the Department. At each visit he fills out and sends to the Department a report (Form 7-C.D.).

(Form 7—C. D.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

QUARANTINE CALL

Address of Premises: _____ Floor _____ Room _____ Flat _____ House _____ Front _____ Rear

Name of Patient: _____

Disease: _____

Quarantine good, fair, poor: _____ Time of visit: _____ M.

REMARKS:

Date _____ 191 _____ Officer.

Be specific in describing character of quarantine violation.

If he discovers a violation of rules, he fills out and sends to the Department a report on a blank (Form 7-C.D.-reverse), giving information upon which to base prosecution in court.

(Reverse of Form 7—C. D.)

VIOLATION OF QUARANTINE

Name in full and address of any person to be prosecuted for willful violation of quarantine: _____

Names in full and addresses of witnesses: _____

Date of violation: _____ 191 . Where occurred: _____

Brief statement of quarantine violation: _____

Date _____ 191

When the case is well, the physician sends to the Department his termination card reply (half of double postal—form 3-C.D.) The health officer is then sent to take a culture from the throat and nose of the patient. If this proves positive he waits three days and then takes another, continuing this procedure until a negative is secured. When the first

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negative is secured he takes another culture on the following day, and one from all "contacts." If all prove negative he fills out a blank (Form 8-C.D.) stating that the case is ready for disinfection, mailing it to the Department.

(Form 8—C. D.)

Report of Inspection for Termination of Quarantine

Address of Patient .....

Name of Patient.....

Disease ..... In Diphtheria, No. cultures made .....

By whom made..... By whom examined .....

Is case clinically diphtheria?.....

Result of Microscopical Examination	Patient's	Date	Contacts	Date
	1st Culture			
	2nd "			
	3rd "			
	4th "			
	5th "			

Is case ready for disinfection?..... Number of rooms to disinfect.....

I hereby certify that two negative cultures in succession have been obtained from the patient and one negative from each contact.

Date ..... 191 ..... M. D.

DO NOT PROMISE ANY SPECIFIC HOUR OR DATE FOR DISINFECTION.

If a "contact" shows a positive result, it is necessary to wait until a negative is obtained before terminating quarantine. When two negatives from the patient and one from the contacts are obtained, a postal card (Form 9-C.D.), is sent to the family notifying it to be ready for the disinfector at a stated time.

(Form 9—C. D.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO.

Chicago, _____ 191____

A health officer will call to disinfect your home_____

In case of Diphtheria or Scarlet Fever, please give patients a full bath, an entire change of clean clothes and keep them in the house until the officer arrives.

Have a clothes line or strong cord ready on which to hang sheets and provide a bed sheet for each room to be disinfected.

HEMAN SPALDING, M. D.,
Chief of Bureau of Contagious Diseases.

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A disinfector is then sent to disinfect the premises after which he removes the warning cards. He then fills out postal cards (Form 10-C.D.) and mails them to the school, Sunday school and factories, which were previously notified of the case, stating that the restrictions placed upon members of the afflicted family have been removed.

(FORM 10—C. D.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO.

W. A. EVANS, M. D., Commissioner of Health.

CHICAGO,_____191___

The Case of Contagious Disease

in the family of_____

living at_____

in the vicinity of your School, has terminated and the premises have been disinfected.

All members of the family are hereby relieved from any further restriction.

Respectfully,

W. A. EVANS, M. D.,
Commissioner of Health.

Finally the disinfector fills out a blank (Form 11-C.D.) and mails it to the Department.

(FORM 11—C. D.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

DISINFECTION CALL

Address of Premises_____ Floor_____ { Room____ Flat____ House____ } { Front Rear }

Name of Patient_____

Disease._____

Total number of rooms_____ Number of rooms disinfected_____

Area disinfected_____ cubic feet. Formalin used_____ ounces.

Schools notified_____

Remarks:_____

Date_____ 191_____ Disinfector.

Disinfection is performed in the following manner:

The room to be disinfected is sealed and prepared as usual for sulphur disinfection, by pasting strips of paper over cracks of doors and windows. All its surfaces are exposed as much as possible; closet doors are opened and their contents, together with the contents of drawers are removed, scattered about and the drawers left open; mattresses are

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set on end; pillows, bedding, clothing, etc., are suspended from lines stretched across the room or spread out on chairs and other objects so as to expose all sides; books are opened and the leaves spread—in short, the room and its contents are so disposed as to secure free access of the gas to all parts as fully as possible.

For every 1,000 cu. ft. of space in the room, suspend by one edge, an ordinary bed sheet (2x2½ yds.) from a line stretched across the middle of the room. Properly sprinkled this will carry without dripping eight (8) ounces of formalin—the 40 per cent solution of formaldehyd gas—which is sufficient to disinfect 1,000 cu. ft. of space. As many sheets as necessary are used hung at equal distances apart. The ordinary rather coarse cotton sheet should be used in order to secure rapid evaporation. The house should remain sealed not less than eight hours.

A rosehead sprinkler used by florists can be used for sprinkling the sheets.

The practice of burning a few sulphur candles in the house does no good and should be abandoned.

Principals of schools should not permit children from an infected house to re-enter school without a termination card from the Department of Health.

A further procedure for the control of diphtheria has been in operation in Chicago for some months. When a case of diphtheria is traced to a school, the Department takes cultures from the throats of all pupils in the room to which the case was traced. Those pupils from whom a positive result is obtained are sent home, quarantined and treated as "carriers" of diphtheria, until a subsequent culture proves negative.

None in the family except the "carrier" is required to be isolated. A special warning card, herewith shown, is posted on the front and rear doors ordering all visitors to keep out and requesting the milk man to take the usual precautions required in diphtheria.

("Carriers" Warning Card. Form K.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

CARRIER OF DIPHTHERIA

HERE

KEEP OUT!

A diphtheria "carrier" may not be sick, but has diphtheria germs in the throat and can spread diphtheria. Such persons will be required to stay in the house until the throats are free from germs. Cultures will be taken to determine this. Grown persons in the house can go in and out. Neighbors and friends must stay out. Milkman must take the usual precautions. These Rules must be obeyed until this warning card is taken down by the Department of Health.

This card must not be removed except by order of the Commissioner of Health.

W. A. EVANS, M. D.,
Commissioner of Health.

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When the warning card is posted, the health officer takes a second culture and if it proves negative the quarantine is terminated; if positive, he takes another in three days, and so continues until a negative is obtained. A printed slip, herewith shown, giving reasons for quarantining "carriers" of diphtheria is handed to the family when the warning card is posted. The warning cards are printed in various languages.

(SLIP HANDED TO FAMILY IN WHICH A DIPHTHERIA "CARRIER" IS ISOLATED.)

DEPARTMENT OF HEALTH---CITY OF CHICAGO

Instructions for Parents in Cases of Diphtheria Carriers

A microscopical examination of a culture from the throat of your child shows the presence of Diphtheria germs. The child may not feel sick, but Diphtheria germs are dangerous to anyone having them in the throat and to others as well.

For the safety of the child and other members of the family, you should have your doctor use something to destroy the germs now in the throat. DO NOT take the child to the doctor. Call the doctor in or see him yourself.

For the safety of the neighborhood, the Department of Health will require the child to remain in the house until the throat is free from germs.

Other persons living in the home can go in and out.

Neighbors and friends must be kept out of the house.

Cultures will be taken from the throat to tell when it is safe.

The milk man must take the usual precautions.

These rules must be obeyed until the warning card is taken down by the Department of Health.

Scarlet fever is quarantined and managed in precisely the same manner as diphtheria, excepting that no cultures are taken unless mixed infection is suspected. Quarantine is more prolonged in scarlet fever cases than in diphtheria. The scarlet fever instruction card, herewith shown,

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and circular of information are similar to those used in diphtheria, being different in details to meet the requirements of scarlet fever.

(POSTER HUNG ON DOOR OF PATIENT'S ROOM)

INMATES OF THE HOUSE MUST STAY INDOORS

READ THIS!

TACK THIS UP INSIDE OF THE HOUSE

SCARLET FEVER

The disease is always dangerous and easily given to others. It is "catching" from the mildest cases. Those not sick enough to be in bed give the disease to others oftener than the very sick.

Scarlet fever patients must not leave the house until the Department of Health **has disinfected the house** and taken down the warning sign.

Keep the patient in one room. No one but the doctor and necessary attendants should be allowed to visit the patient. It is against the law to do so.

Persons living where there is **a case of scarlet fever** will not be allowed to go in and out of the house. They must either **stay** in the house all the time, or room and board away from home all the time, until the Department of Health takes down the warning card.

Visitors will not be allowed to enter the house.

Groceries and **milk** must be left at the door.

Everything—letters, laundry, bedding, books, magazines, papers, and clothing—**must be disinfected** before they are taken out of the house.

Everything used in the sick room, such as knives, forks, spoons, dishes, books, playthings, handkerchiefs, towels, sheets, pillowslips, clothing, flowers, and remnants of food, must be **put in a disinfectant solution** before taken from the room.

Do not let the patient **spit** on the floor. Spit and nose discharges will give the disease to others, and should be caught on cloths and put into a strong disinfectant solution or burned.

Do not **kiss the patient.** After touching the patient wash your hands.

School children and others **must stay at home.** No one is allowed to go to church, Sunday school, or to other public places. The placards on the doors must not be taken down by any one except a health officer. It is against the law to do so.

No matter how well the patient may look or feel, until the Department of Health has **disinfected the house** and taken down the warning sign, the patient must be kept away from others.

If these rules are not obeyed the patient will be taken to the hospital.

READ THE CIRCULAR UPON SCARLET FEVER

You must not allow visitors to enter the house

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When typhoid fever is reported to the Department of Health, a medical health officer visits the home from which the case is reported to learn, if possible, the source of the infection and to instruct the attendants how to destroy typhoid contagion and prevent communicating the disease to others. He inquires into the water, milk and other food supplies and learns if the patient has been away from home just preceding the attack and other information required to fill out the report. A milkman's warning card, elsewhere shown in this article, is placed on the rear door and a circular of information on typhoid is given to the family and verbally explained.

Investigations in cases of typhoid are quite exhaustive, as will be seen by "Form 12A, C. D.," on succeeding page.

HEALTHGRAMS.

From *The Bulletin.*

Swat that fly.

* * *

Fly-time is typhoid-time.

* * *

Filth for flies and flies for fever.

* * *

Kill the flies or they may kill you.

* * *

The three (dis)graces—filth, flies and fever.

* * *

Your worst enemy—the common fly, "the typhoid fly." Swat him.

* * *

If it's real estate you're looking for—buy "hokey pokey." It's 15 per cent dirt.

* * *

"Fruit a la filth"—the kind served from sidewalk stands after exposure to street dirt and flies.

* * *

If you allow flies to flock into your place, your trade will fly from you. (A hint to restaurant keepers, grocers and marketmen.)

* * *

Not every fly that comes along is carrying disease germs, but many of them are and you can't tell which is which. Take no chances—swat all.

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(FORM 12A. C. D.)

REPORT OF INVESTIGATION OF TYPHOID FEVER CASE.

Case No.....Reported..... By.....
Date

Under treatment at..... Ward.....

How long lived in Chicago prior to illness? .....years ... ..months .....days

Name of Patient.....Sex..... ....

Patient's birthplace.....Race .....

Mother's birthplace ..... Race .....

Probable date of onset.....Definite date of onset.....
Date of first symptoms Date took to bed

Was Widal reaction present?.....Rose spots?..... ..When?... .....
Date of Rose Spots

Intestinal hemorrhage?..... When?..... .....

Previous attack of typhoid..... When?.....

Residence when taken sick. ..... From.....to.....
Date Date

Previous places of residence.....From.....to.....
Street and No. if in Chicago Date Date

" " " " ..... From..... to.....
Date Date

Subsequent residence..... .....From. .... .. to.....
If Hospital, give name Date Date

Character of residence: Private House; Boarding House; Hotel; Flat; Store; Basement; Barn; Other....

Any newcomers in household within 3 months?..... .....

" " " " had typhoid fever?.....When?.....

Servants: Names (1).....(2).....

Addresses (1)..... .....(2)..... ....

Had typhoid when? (1) .....(2).....

Were servants associated with typhoid patients?..... Where?.....

Disposal of sewage: W. C. in house... W. C. in yard....Privy or privy vault....

Location of privy or vault. .....

Condition of sanitary devices .....

Disposal of garbage:..... Is garbage can covered?.....

How often garbage removed? .....

Is house screened? .....Flies?..... Other insects?.....
Few, many, swarming Few, many

General sanitary condition of residence: Good; Fairly Good; Rather Bad; Bad .....

Previous cases typhoid in house.....

" " in neighborhood.....

Occupation:..... Where?..... From..... to.....
Kind of work Place of employment Date Date

Other cases at place of employment..... .....

Water used at place of employment: Solely; principally; occasionally... .....

Bathing in—Clay holes, streams, lake..... ....

Had patient been away from Chicago within 30 days prior to illness .....

Where? .....From.....to.....
Date Date

Where? ....From.....to. .....
Date Date

At places visited, what were sources of drinking water supply?.....

Source of milk supply?. .....

Any known cases in vicinity of places visited?.....

Names of steamers traveled on: (1)..... .....When?..... .

(2).....When?.....

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(FORM 12B.—C.D.—REVERSE OF 12A.)

Water for drinking 30 days prior to illness: ..... Solely Principally Occasionally

Source of ice supply .....

Food within 30 days prior to illness: Where taken.....

Milk, how used ..... Beverage In Cereals In hot Coffee or Tea only

Source of milk supply..... Used..... Solely Principally Occasionally

Boiled or pasteurized at home.....Ice cream .....Source of .....

Lettuce.....Celery.....Radishes..... Strawberries.....

Raw shell fish.....Source.....

CONTACTS:

Association with patients in febrile stage.....

" " suspected cases.....

" " persons previously had typhoid within six months.....

" " " " " " " one year.....

" " " who were in contact with patients.....

PROPHYLAXIS:

Are stools disinfected ? .....How ?.....

How are stools disposed of ?.....

Is urine disinfected ? ....How ?.....

How is urine disposed of ? .....

Other precautions ..... Efficient Fairly efficient Inefficient

Name of attending physician..... .....

Address " " .... Phone.....

Summary ....

.....

....

.....

Recommendations ....

.....

.....

Date of Inspection..... (Signed)..... Medical Inspector.

If screening against flies and proper treatment of discharges from patient are not practiced, the patient is ordered to a hospital. At the termination of the case, disinfection with chlorid of lime and formalin is performed when conditions are such as to require it.

In the event of the milk supply being suspected, a dairy inspector is sent to the farms in the country from which the milkman receives his supply, to look for possible sources of infection. If the source is located on any farm, shipment of milk from that place to Chicago is prohibited.

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On the same day on which a report of a case of contagious disease is received, a card acknowledging the receipt of the report, to which a termination card is attached, is mailed to the doctor making the report, along with a circular of information on proper handling of the case.

A special check mark is made on the card received from the attending physician showing that a termination card and literature were mailed on a given date. A clerk writes in the return portion of termination card the name and address of the patient so the physician has only to date, sign and return postal when the case is ready to terminate. We also place in the lower left hand corner of the return portion of the termination card the date when the case was reported and the number of days sick when reported.

In the upper right hand corner of the termination cards for diphtheria, scarlet fever, whooping cough and measles is written the name of the quarantine officer who is to disinfect the case or remove warning placard when the case is terminated. This expedites handling of the case when the termination card is returned. For the same reason there is written in upper left hand corner of return portion of the termination card in diphtheria cases the name of the medical inspector who is to take terminal cultures.

All envelopes for cases of reported contagious diseases are kept in the "current" files until the cases are terminated, and they are then placed in the "terminated" files. After two years the face of the filing envelope, showing the important data relating to the case, in cases of diphtheria, scarlet fever, typhoid, smallpox and tuberculosis, is torn off and filed, in a "permanent" file, against the premises on which the case was found. Any data called for on the face of the filing envelope which was not obtainable at the time the envelope was written up is added as reports are received from time to time from the health officers, the municipal laboratory and the quarantine officers. Four or five reports are received daily from the Department laboratory giving results of examinations of throat cultures, these results being immediately recorded on the face of the filing envelope as "diagnostic cultures" or "terminal cultures."

Thus our file record at all times shows the status of the case as to cultures, complaints, quarantine, conditions and correspondence, if any.

Cases ready for termination are telephoned to the disinfector before 8 a. m. on the day that disinfection is to be performed. In this way cases received in the 7 a. m. mail are assigned and disinfected by noon the same day, and on the following morning the disinfectors' report is at hand and the data entered on face of the filing envelope. The envelope is then stamped "Terminated" or "Disinfected" and transferred to the "terminated" file.

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Records and reports of each investigation made on complaint are kept in file envelopes under street address. Should an investigation reveal a contagious disease, it is reported by the health officer making the investigation and then handled as any other case of contagious disease.

Complaints of lax or broken quarantine are telephoned to the medical officer or quarantine officer for investigation, and if his written report verifies the complaint, an entry is made on the face of filing envelope, together with a statement of measures taken to prevent further violation of quarantine rules.

Reports from health officers of each school visited are received daily and all data on each is carefully tabulated. These reports are then filed in a special "school" cabinet under the name of the school. A monthly report of combined school and field work is received from each medical health officer and filed under the name of the officer.

A monthly report giving a summary of data on physical examinations of school children is received and filed under the name of the health officer making the report.

A similar monthly report combining data on disinfections and quarantine is received from each quarantine officer and filed under the name of the quarantine officer.

Monthly spot maps are made of all cases of diphtheria, scarlet fever, typhoid and tuberculosis. Cases are spotted on the map the day report is received.

A tabulated record is kept of all cases of scarlet fever or diphtheria in each school, thus enabling us to determine the number of cases charged to any school by medical inspectors for any period of time.

A tabulated record is also kept of all cases of diphtheria, scarlet fever and typhoid according to the source of milk supply. When an unusual number of cases are found among the patrons of a dealer the fact is reported to the food bureau for investigation.

Reports are received from druggists of sales of diphtheria antitoxin, giving the address of buyer. We check these against our file records, and if our files contain no report of the case from a physician, a health officer is sent to determine if there exists a case of unreported diphtheria.

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The druggist is required by ordinance to report all sales of antitoxin to the Department, the following postal card (Form 2) being provided druggists by the Department for this purpose:

(FORM 2)

Department of Health, Chicago

An ordinance passed by the City Council Nov. 1, 1909, requires all persons, firms or corporations to report to the Commissioner of Health within 24 hours any sale or gift of diphtheria antitoxin within the City of Chicago, giving the information indicated below.

FILL OUT AND MAIL THIS CARD

Name of Seller _____

Address _____

Name of Buyer _____

Address _____

Name of Patient _____

Address _____

Date of Sale _____ 191 Hour of Sale _____ M.

Number of Bottles _____ Number Units in each _____

Date _____ 191

MEDICAL SCHOOL INSPECTION.

For the supervision of approximately 400,000 school pupils in the public and parochial schools of Chicago, the city employs one hundred medical health officers and forty-one nurses, all of whom secure their appointments by competitive civil service examinations. For administrative purposes five medical health officers are selected to supervise without extra pay the other ninety-five; and two nurses, one receiving fifteen dollars per month more than the others, supervise the other thirty-nine. The city is divided into ninety-five districts, to each of which is assigned a medical health officer, whose duty it is to inspect the pupils in the schools of the district. In addition he has control and supervision of all contagious diseases in the territory to which he is assigned.

The inspection of schools is carried out in the following manner: The medical health officer makes daily visits to each school assigned him, commencing work at 9 a. m. At the beginning of the term he makes a rapid inspection of all pupils to determine if any are seeking admission, who bear evidence of a contagious disease.

For this preliminary inspection the health officer visits each room, stands with his back to a window, and has all pupils in the room file past him for inspection. The pupil, in passing, exposes to view palms of hands and wrists; with the fingers of one hand pulls down the eyelid, exposing the conjunctiva; opens the mouth and puts out the tongue. This hurried inspection is made by the physician

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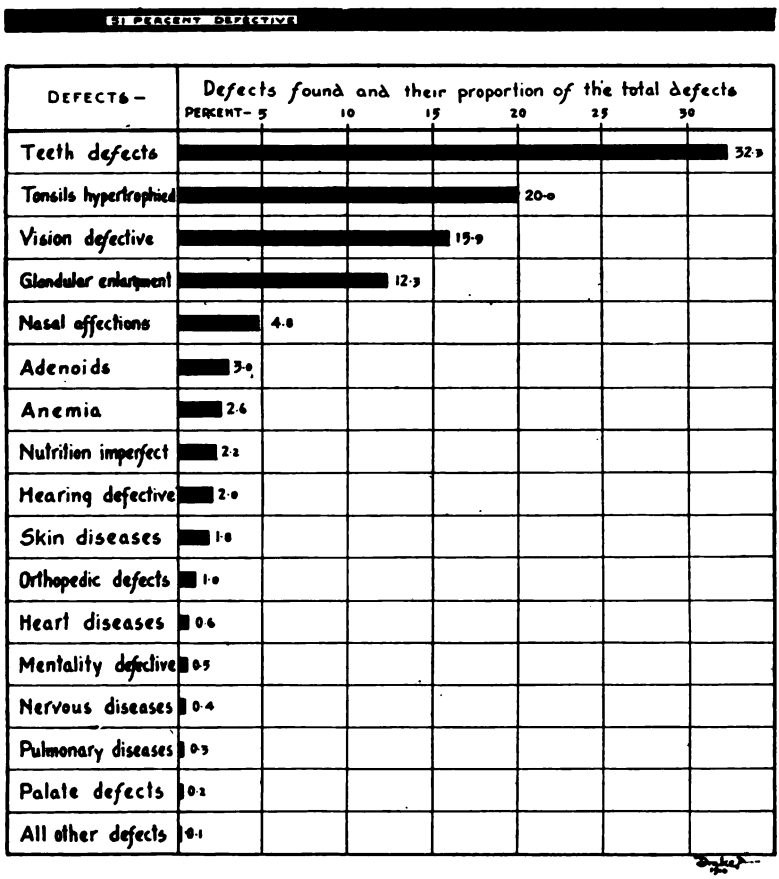
without touching the pupil. Skin diseases, eye diseases and evidences of scarlet fever in the convalescent stage are detected in this manner. After the completion of this preliminary inspection, which should take but a few days, the regular forenoon inspection is taken up.

PHYSICAL DEFECTS IN SCHOOL CHILDREN

A Summary of the Reports of the School Medical Inspectors
Of the Department of Health, City of Chicago.
For the Year 1909



Inspections and examinations at high schools are done only on request or in cases of emergency. Parochial schools desiring physical examination of their pupils and co-operating with the Department have the same service as the public schools. Inspection for

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contagious disease in parochial schools is enforced. In making physical examinations, we begin with the pupils in highest grade, completing one school before beginning "physicals" in another.

The daily routine inspection is as follows:

Inspection is first made for contagious diseases, after which ten or more physical examinations are made.

The health officers request principals to have all pupils in readiness for inspection who have been absent from school for four consecutive days. The principal and nurse also refer to the health officer any pupil in school who is suspected to be suffering from a contagious disease.

All children to be examined are sent to a room by themselves, where the other pupils will not come in contact with them, and where the school inspector can examine them. Inspection is made with reference to communicable diseases and vaccinal status of pupils.

Pupils with marked defects needing immediate attention, referred to the health officer by the principal, teacher or nurse, are examined without delay. If agreeable to the principal, Friday is designated as a day for such emergency examinations.

The following contagious diseases should be looked for: Scarlet fever, diphtheria, measles, rotheln, mumps, smallpox, chickenpox, tonsillitis, pediculosis, ringworm, trachoma, impetigo contagiosa or other transmissible diseases of the skin, scalp and eye. Tuberculous cases, when thought to be a menace to the public health, must be excluded from school.

Scarlet fever cases are not allowed to return to school until all desquamation is completed and there is an entire absence of discharge from ears, nose, throat or suppurating glands, and the child and premises are disinfected. This requires at least six weeks, and in severe cases eight weeks or longer. Those exposed to scarlet fever must be excluded from school one week from date of last exposure.

Diphtheria cases are excluded until two throat cultures made upon two consecutive days show absence of the Klebs-Loeffler bacillus. Those exposed to diphtheria should be excluded at least one week from date of last exposure.

Measles cases are very infectious in the early stages and are excluded at least three weeks and longer if there is present bronchitis, inflammation of the throat or nose or abscess of the ear. Those exposed to measles are excluded three weeks from date of last exposure.

Whooping cough cases are excluded until after the spasmodic stage of cough, usually about eight weeks. Whooping cough is very

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infectious in the early stages of the disease. Those exposed to whooping cough are excluded three weeks from date of last exposure.

Cases of mumps are excluded ten days after all swelling has subsided. Those exposed to mumps should be excluded three weeks from date of last exposure.

Chickenpox cases are excluded until scabs are all off and skin smooth, which is usually two or three weeks, depending on the severity of the attack. Those exposed are excluded two weeks.

Cases of rötheln (German measles) are excluded from school two weeks. Those exposed to rötheln are excluded from school three weeks from date of last exposure.

Cases of tonsillitis must be excluded on the clinical evidence alone, and throat cultures made for further diagnosis.

Cases presenting suspicious throats must have throat cultures made, and not be allowed to return to their classes until the cultures have been examined and found negative.

In making throat examinations, the wooden tongue depressors supplied by the Department are used to the exclusion of all other tongue depressors. Each tongue depressor is used only once and then burned. Aseptic methods are employed in all examinations.

If a child is excluded, brief but sufficient reasons therefor are written on the exclusion card.

Health officers are forbidden to make any suggestions as to the treatment or management of pupils who are sick. *This command is imperative.*

Children recovering from measles, rötheln, whooping cough, mumps, chickenpox, scarlet fever, diphtheria and smallpox must not re-enter school without a permit from the Department of Health.

When a pupil is taken sick with a contagious disease in a school room, the pupils in the room are dismissed and the room is disinfected. In case of diphtheria, cultures are taken from the throats of the children closely associated with the sick pupil in the room, and all found to have diphtheria germs in their throats are excluded from school.

If smallpox is found in the eruptive stage, the child is taken to his home, if near, and there isolated until the ambulance arrives, or isolated in the room where found. In doing this no one should be allowed to come near the infected child. Children properly vaccinated who have been exposed to smallpox are not excluded from school. Those exposed and not vaccinated are excluded twenty days.

Pupils living in apartment buildings where an infectious disease exists are excluded from school by the principal. A medical health officer visits the building and determines who can return to school with safety. It depends upon the construction of the building and the habits of the inmates whether it is safe to let any from the

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building continue attendance at school. The inspector is the judge. Usually if families use the same entrance there is some risk, and yet a case can be so well isolated and cared for that all others in the building are safe. A visit to the building is necessary to determine this.

All cases of infectious diseases coming under the observation of the medical health officer which are not properly safeguarded command his attention.

Beginning November 1, each year, medical health officers vaccinate free of charge any child or pupil who may apply to them for vaccination, and issue certificates of vaccination to those entitled to the same. The health officers vaccinate no child without the consent of parent or guardian.

The Department prefers that the family physician should perform vaccination; but if the parent or guardian of a child wishes it done by the Department, the child may be taken or sent to the health officer, whose duty it is then to vaccinate such child and furnish a certificate without charge. He also examines every school pupil's arm to determine the vaccinal status. Any discovered not complying with the vaccination ordinance is informed of the necessity of securing a protective vaccination. Health officers make monthly reports upon blanks furnished for that purpose, giving the number of tubes of vaccine received during the month, the number of primary vaccinations performed, the number of certificates issued to those previously vaccinated within seven years and entitled to a certificate without revaccination, the number of attempted vaccinations on primary subject resulting in failure to take, and the number of attempts at vaccination in previously vaccinated subject resulting in failure to take.

In making physical examinations information is sought regarding the following: Revaccination; diseases during year; height, weight; nutrition; anemia; enlarged glands; goitre; nervous diseases; cardiac disease; pulmonary disease; skin disease; orthopedic defect; rachitic type; defect of vision; other diseases of eye; defect of hearing; discharging of ear; defect of nasal breathing; defect of palate; defect of teeth; hypertrophied tonsils; adenoids; mentality; conduct; effort, proficiency.

Health officers carry with them the following supplies: Circulars on "Prevention of Consumption;" "The Vaccination Creed;" special circulars on each of the infectious diseases, and warning slips to distribute and post in public places; wood spatulas for tongue depressors; culture media and outfits for Widal test.

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The blanks used in school inspection will be mentioned in the order in which they are used. Family history blank:

(FORM 1—M. S. I.)

DEPARTMENT OF HEALTH

CITY OF CHICAGO

NAME OF PUPIL_____ HEIGHT_____

ADDRESS_____ WEIGHT_____

AGE_____ BIRTHPLACE_____

FATHER'S BIRTHPLACE_____

MOTHER'S BIRTHPLACE_____

NUMBER OF CHILDREN IN FAMILY_____

HAS CHILD HAD SCARLET FEVER_____ MEASLES_____

DIPHTHERIA_____ WHOOPING COUGH_____ PNEUMONIA_____

Place a X after the diseases child has had.

The above card is handed to the pupil for the parents to fill out. The data secured on this blank is transcribed at the top of the pupil's physical record card (No. 2):

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(FORM 2-M. S. I.)

PHYSICAL RECORD

DEPARTMENT OF HEALTH—CITY OF CHICAGO

NAME ADDRESS

Sex..... Age..... Birthplace.....

Nationality of Father..... Mother.....

Number of Children in Family..... History of Measles.....

Diphtheria..... Pertussis..... Pneumonia..... Scarlet Fever.....

School..... Vaccinated?.....

Date of 1st Examination..... 19..

O Placed in square means absence of defects. X Denotes defects.

	1 Grade	1	2	3	4	5	6	7	8
2	Years in School								
3	Revaccination								
4	Diseases during Year								
5	Date of Physical exam.								
6	Height								
7	Weight								
8	Nutrition								
9	Anemia								
10	Enlarged glands								
11	Goitre								
12	Nervous diseases								
13	Cardiac disease								
14	Pulmonary disease								
15	Skin disease								
16	Defect orthopedic								
17	Rachitic type								
18	Defect of vision								
19	Other diseases of eye								
20	Defect of hearing								
21	Discharging ear								
22	Defect of nasal breathing								
23	Defect of palate								
24	Defect of teeth								
25	Hypertrophied tonsils								
26	Adenoids								
27	Mentality								
28	Conduct								
29	Effort								
30	Proficiency								
31	Was treatment advised?								

On the reverse side of this card there are spaces for all diagnoses, records of treatment and dates of same while the child is in school. The footnote on this side of the card reads as follows: "This card should be kept on file in the Principal's office, and must

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accompany transfer slip, and when the pupil is through attending school, this card must be filed in the Department of Health."

(FORM 3-M. S. I.)

CITY OF CHICAGO, DEPARTMENT OF HEALTH

MEDICAL INSPECTION OF SCHOOLS

_____ 19____

SCHOOL _____ ROOM_____

NAME OF PUPIL_____ AGE_____

HOME ADDRESS _____

THE ABOVE NAMED PUPIL IS HEREBY ORDERED TO DISCONTINUE ATTENDANCE AT SCHOOL TEMPORARILY FOR THE FOLLOWING REASONS:

_____

_____

_____ M. D.

Hand to pupil excluded MEDICAL INSPECTOR

When a pupil is found at school with a contagious disease he is excluded from school, the blank (3-M.S.I.) is filled out, inclosed in an envelope and sent with the pupil to the parents. A carbon duplicate of this blank is left in the book for the nurse.

When a pupil is found to have a physical defect, needing attention, a statement of the condition is made by the health officer on the following form (4-M.S.I.), which is made in duplicate, the carbon copy being handed to the pupil to take to his parents, the original being retained by the nurse:

(FORM 4-M. S. I.)

"This Notice Does NOT Exclude the Child From School"

DEPARTMENT OF HEALTH

THE CITY OF CHICAGO

_____ 19____

The parent or guardian of_____

of_____attending_____School

Room_____is hereby informed that a physical examination of the child gives evidence of an abnormal condition of the_____

_____

_____

Remarks _____

_____

Take the child to your family physician for treatment and advice. Take this card with you to the family physician.

For Nurse. _____M. D.

Medical Inspector.

On the reverse side of the above card the following note, with space for observations, appears: "The nurse must return this

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to the medical health officer when the defect in the child has been corrected or treatment begun. State below what has been done in the case, so that the medical health officer can complete the child's record."

At the conclusion of the day's work the health officer forwards his report on the following form (Form 5-M.S.I.):

(FORM 5-M.S.-I.)

DEPARTMENT OF HEALTH, CITY OF CHICAGO

HEALTH OFFICER'S DAILY REPORT

SCHOOL _____ CHICAGO _____ 19__

TIME OF { ARRIVAL _____ DEPARTURE _____ } TOTAL NO. EXAMINATIONS _____

DISEASE	DIPHTHERIA	CONTACT	SCARLET FEVER	CONTACT	MEASLES	CONTACT	PERTUSSIS	CONTACT	CHICKENPOX	CONTACT	SMALLPOX	CONTACT	MUMPS	CONTACT	TUBERCULOSIS	TONSILITIS	ACUTE CORYZA	TRACHOMA	CONJUNCTIVITIS	RINGWORM	IMPETIGO	SCABIES	FAVUS	PEDICULOSIS	MISCELLANEOUS	TOTAL
CASES FOUND																										
CASES EXCLUDED																										

NO. OF VACCINATIONS PERFORMED, P. VAC _____ REVAC _____ TOTAL _____

NO. PHYSICALS MADE _____ NO. CHILDREN FOUND DEFECTIVE _____

NO. ADVISED TO SEEK TREATMENT _____ NO. OF CULTURES MADE _____

_____ HEALTH OFFICER.

(REVERSE OF FORM 5-M.S. I.)

EXCLUSIONS

NAME	AGE	RESIDENCE	REASON

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(FORM 7—M. S. I.)

DEPARTMENT OF HEALTH—CHICAGO

TAKE THIS CARD TO YOUR PHYSICIAN AND BRING IT BACK TO THE SCHOOL NURSE.

School_____ Room _____ Nurse _____

Name_____ Address _____

The physician who examines the above named pupil is respectfully requested to sign and date this card and return it to the child.

I have this day examined the above named child and have begun treatment.

_____ M. D.

Date_____

Diagnosis written on other side would be helpful to us.

At the end of each month a monthly summary of physical examinations is made to the Department on the following blank:

(FORM 6-M. S. I.)

DEPARTMENT OF HEALTH—CITY OF CHICAGO

HEALTH OFFICER'S MONTHLY REPORT

School..... Month ended .....191....

Number of physical examinations.....

Number requiring treatment.....

NATIONALITY OF THOSE REQUIRING TREATMENT

Native born ..... Foreign born .....

One or both parents foreign born.....

DEFECTS FOUND

Nutrition	Vision.....
Anemia	Other diseases of eye.....
Enlarged glands.....	Hearing .....
Goitre.....	Discharging ear .....
Nervous diseases	Nasal breathing.....
Cardiac diseases.....	Palate.....
Pulmonary diseases.....	Teeth.....
Skin diseases.....	Hypertrophied tonsils.....
Orthopedic.....	Adenoids.....
Rachitic type.....	Mentality .....

.....Health Officer

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School Nurse Service.

The hours for work for nurses are from 9 a. m. to 5 p. m., with time off for luncheon. Nurses visit schools and make routine inspections of hair, eyes, skin and throats of pupils, and find out from the medical health officer's record cards the names and addresses of pupils excluded on account of a contagious disease, and those found defective who have been advised to seek treatment.

The nurse leaves a list each day, referring all cases except pediculosis to the medical health officer for diagnosis and disposal. She treats no case until diagnosis is made. Emergency treatment for cuts, burns or skin wounds may be given once by the nurse if necessary; the parents are then advised to continue treatments or have the child placed under care of a physician.

Children with marked physical defects—for instance, those requiring glasses, or suffering from enlarged tonsils, adenoids or nervous diseases—who have been advised by the medical health officer to seek medical advice, are visited by the nurse at their homes, and in case treatment has not been begun she advises medical attention. Treatment for favus, scabies and pediculosis is advised or administered by the nurse at the home.

Where operation or treatment is indicated, and the family is not able to pay for treatment, the child's father or mother is expected to go to a free dispensary or hospital with the child. If not possible for the parent to do so, the nurse accompanies the child if the parents give a written request to that effect. Nurses may visit homes of those reported absent from school on account of sickness, but do not enter the home if case is found to be one of contagious disease.

Upon visiting a school the nurse secures the carbon copy of the card issued to a pupil who was found by the medical health officer to be in need of medical or surgical treatment. She then goes to the pupil's home to see if treatment of the child has been secured in compliance with the suggestion of the medical health officer. If she finds that treatment has been begun, the fact is noted on the carbon slip and the information is transcribed by the nurse on the back of the child's record card which is on file in the school. This carbon slip is then mailed to the Health Department and placed on file.

In case the nurse finds that no treatment of the child has been begun, she then gives the child a card and instructs that it be taken to the family physician. When this card is returned to the nurse with the physician's diagnosis and statement of treatment begun, she records this information on the back of the child's record card which is on file in the school. The family physician's card is then mailed to the Department of Health and placed on file.

Minor contagious diseases are treated by the school nurse after a diagnosis has been made by the doctor, provided the parents are

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not able to employ a physician or fail to place the child under treatment. The diseases to be treated and the methods to be used by the nurse in treating them are as follows:

Pediculosis: Mix equal parts of kerosene oil and olive oil and rub the mixture well into the scalp. Then with a piece of muslin cover the hair and fasten it about the head, avoiding contact with a lighted gas jet or flame of any kind. The following morning the scalp should be washed with soap, hot water and vinegar. A fine-toothed comb wet in vinegar should be used to remove "nits." The hair is then thoroughly dried with a towel. This treatment should be repeated two or three times.

Favus, Ringworm of Scalp (Mild Cases): Scrub with tincture of green soap, epilate, cover with flexible collodion. In severe cases paint with tincture of iodin before applying collodion.

Ringworm of Face or Body: Wash with tincture of green soap and cover with flexible collodion. In persistent cases paint with tincture of iodin.

Scabies: Scrub with tincture of green soap; apply sulphur ointment.

Impetigo: Remove crusts with tincture of green soap; apply white precipitate ointment, 10 to 12 per cent strength.

HEALTHGRAMS.

From *The Bulletin.*

Keep your hands clean. Soap is your good friend—dirt is your worst enemy.

* * *

Eat very little candy—treat your stomach well and you'll live longer.

* * *

Never buy candy or fruit at an open stand on the street. Flies have left all kinds of dirt on it and dirt from the streets has been blown upon it.

* * *

When you play, play out of doors—but never play in dusty places.

* * *

Don't run to school—especially just after eating. Start in time so that you will not have to run.

* * *

Be well and you'll be happy—even in school.

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SUMMARY OF CONTAGIOUS DISEASES REPORTED TO THE DEPARTMENT OF HEALTH DURING THE FOUR YEARS 1907-1910 BY MONTHS.

Diseases	Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
Diphtheria	1907	923	690	491	355	293	259	186	212	337	521	563	508	5338
	1908	417	401	379	233	254	306	255	251	341	788	880	934	5439
	1909	745	522	522	483	378	320	268	223	327	550	719	601	5658
	1910	468	443	470	527	468	484	406	394	470	769	1155	1907	7961
Scarlet Fever	1907	3058	1741	894	562	421	315	276	242	270	291	341	445	8856
	1908	473	438	416	354	301	287	203	173	297	608	841	914	5305
	1909	881	590	644	587	455	382	261	216	342	514	684	686	6242
	1910	688	671	692	600	680	595	298	271	269	364	583	716	6427
Smallpox	1907	3	4	17	6	23	13	5	0	1	6	7	5	90
	1908	13	11	20	15	7	7	2	0	0	2	0	0	77
	1909	3	2	4	0	3	4	0	1	1	2	1	4	25
	1910	3	1	1	3	10	2	0	2	1	1	1	6	31
Measles	1907	382	544	495	415	499	477	201	53	68	73	137	207	3551
	1908	275	573	1019	1308	1358	963	260	62	55	90	275	453	6691
	1909	393	460	527	1188	2092	1891	885	182	95	185	481	581	8960
	1910	715	978	1794	2157	2101	1715	622	155	65	70	167	381	10920
Whooping Cough	1907	36	37	22	15	12	15	29	69	64	27	25	59	410
	1908	93	102	131	94	104	124	144	88	73	57	59	66	1135
	1909	81	68	69	103	156	194	178	332	230	123	140	152	1826
	1910	203	255	440	401	283	225	234	218	136	58	46	53	2552
Tuberculosis	1907	22	21	22	7	13	21	62	175	161	158	127	130	919
	1908	170	161	195	227	175	148	192	149	129	203	507	321	2577
	1909	405	433	412	369	282	223	291	318	291	338	397	330	4089
	1910	392	472	450	471	522	607	493	494	461	599	555	605	6121
Pneumonia	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	283	198	199	178	188	81	60	15	26	97	97	77	1499
	1909	201	182	186	222	250	78	77	55	33	62	62	9	1417
	1910	122	121	245	216	227	187	72	62	52	79	179	355	1917
Typhoid Fever	1907	28	35	17	9	14	15	23	106	106	75	71	50	549
	1908	422	367	267	288	245	166	255	117	235	463	198	205	3228
	1909	207	266	220	139	114	93	119	169	248	200	113	73	1961
	1910	92	77	31	49	49	57	119	352	387	363	314	160	2450
Chickenpox	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	108	129	183	159	107	88	15	5	29	47	226	379	1475
	1909	451	354	341	176	261	198	43	25	33	111	248	238	2479
	1910	210	186	191	141	148	132	29	18	40	149	236	374	1854
Mumps	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	73	47	120
	1909	133	151	209	193	273	198	34	8	36	67	149	143	1594
	1910	218	193	201	142	127	80	15	6	27	91	70	90	1260
Cerebro-Spinal Fever	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	6	4	10
	1909	1	3	6	7	6	0	1	1	3	3	1	1	33
	1910	5	10	7	7	3	8	4	3	4	6	4	3	64
Puerperal Fever	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	5	....	....	....	....	....	2	4	7	18
	1909	3	3	0	3	3	2	0	1	0	2	2	3	22
	1910	0	5	5	6	5	5	0	1	3	2	1	10	43
Erysipelas	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	20	50	70
	1909	47	71	59	44	48	13	16	10	16	15	23	36	398
	1910	47	64	58	37	54	47	25	19	14	25	43	57	490

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SUMMARY OF CONTAGIOUS DISEASES REPORTED TO THE DEPARTMENT OF HEALTH DURING THE FOUR YEARS 1907-1910 BY MONTHS.—*Continued.*

Diseases	Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
German Measles	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	10	306	382	240	15	1	3	1	2	9	969
Infantile Paralysis	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	....	....	....	....	....	....	....	1	11	7	19
Diarrheal Diseases	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	....	....	....	....	31	24	14	4	3	1	77
Tetanus	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	....	....	....	....	1	....	....	....	1	....	2
Influenza	1907	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	....	....	....	....	....	2	....	1	....	7	10
Other Diseases	1907	58	64	31	28	48	43	25	16	28	53	100	123	617
	1908	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1909	....	....	....	....	....	....	....	....	....	....	....	....	.....
	1910	....	....	....	....	....	....	....	....	....	2	1	....	3

Total contagious diseases reported during year 1907—20,330.
" " " " " " 1908—27,644.
" " " " " " 1909—34,704.
" " " " " " 1910—42,770.

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CASES OF DIPHTHERIA.

Reported by months and wards during 1910.

WARD	January	February	March	April	May	June	July	August	September	October	November	December	Total	Normal	(1) high (2) low
1	2	3	10	7	9	9	4	3	3	4	14	12	80	38	.....
2	10	8	11	6	7	4	0	4	1	9	19	51	130	76	.....
3	5	8	10	11	8	4	7	3	3	2	13	29	103	114	.....
4	3	5	9	8	5	3	5	10	13	40	53	63	217	228	.....
5	9	7	13	11	13	11	5	10	23	26	28	27	183	266	.....
6	13	5	9	7	12	5	8	2	11	14	12	48	146	152	.....
7	14	11	22	14	12	14	16	12	4	16	55	66	256	228	.....
8	16	11	10	12	11	8	4	5	8	14	19	19	137	266	.....
9	15	31	25	30	36	22	28	24	21	26	49	47	354	190	.....
10	15	22	37	31	19	14	18	17	15	24	41	55	308	228	.....
11	25	22	10	14	19	17	11	14	16	28	48	70	294	266	.....
12	16	17	13	13	13	17	11	12	18	28	37	65	280	418	.....
13	3	6	14	12	15	20	10	12	6	16	23	38	175	152	.....
14	5	12	5	8	7	17	16	6	8	31	24	49	188	190	.....
15	7	7	9	21	14	6	20	7	16	14	41	40	202	228	.....
16	20	11	10	15	16	16	13	13	24	31	27	38	234	456	(2)
17	7	17	18	21	12	17	16	14	12	39	61	55	289	266	.....
18	12	3	8	7	4	6	4	1	6	10	6	49	116	38	(1)
19	28	24	30	25	19	8	15	26	23	24	38	98	358	228	.....
20	21	20	18	13	17	17	13	13	10	24	35	55	256	152	.....
21	9	7	4	12	12	7	3	5	4	18	48	29	158	76	.....
22	12	9	11	31	32	17	23	11	8	16	34	96	300	190	.....
23	6	11	8	20	10	16	9	6	7	15	24	43	175	152	.....
24	16	15	10	11	16	26	11	9	12	16	14	23	179	228	.....
25	16	5	9	16	17	16	11	12	27	32	45	59	265	266	.....
26	14	6	21	17	12	21	18	37	16	29	43	64	298	266	.....
27	23	32	15	9	26	35	22	16	24	44	59	184	489	532	.....
28	21	16	12	11	7	18	7	15	21	40	37	105	310	266	.....
29	18	13	9	17	16	10	12	15	32	30	35	39	246	228	.....
30	4	10	5	9	3	10	9	15	16	9	11	72	173	228	.....
31	14	6	12	11	9	14	8	12	8	25	18	39	176	304	.....
32	16	12	10	15	7	7	6	10	8	15	49	42	197	266	.....
33	19	12	5	13	13	14	4	6	12	9	22	45	174	304	.....
34	16	11	14	18	6	19	17	14	16	31	32	46	240	266	.....
35	6	6	10	16	6	11	12	11	13	14	28	31	164	228	.....
*Hospital	8	18	18	13	8	6	1	2	3	7	2	5	91	.....	.....
Elsewhere	0	0	0	2	0	2	0	1	1	0	1	11	18	.....	.....
Totals	464	439	464	527	468	484	397	405	469	770	1145	1907	7939		

*Residence not stated.

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CASES OF TYPHOID FEVER.

Reported by months and wards during 1910.

WARD	January	February	March	April	May	June	July	August	September	October	November	December	Total	Normal	(5) high (6) low
1	1	3	0	1	0	2	2	9	7	15	8	2	50	29	.....
2	5	2	2	2	1	1	2	7	7	5	1	2	37	39	.....
3	1	1	0	4	1	0	0	6	8	5	6	2	34	39	.....
4	4	0	0	0	0	0	2	9	5	9	5	3	37	49	.....
5	2	4	0	1	0	2	4	11	7	9	7	3	50	49	.....
6	2	2	2	2	0	6	4	8	11	11	7	3	56	68	.....
7	8	8	3	3	2	2	5	9	41	15	6	17	119	87	.....
8	2	6	0	1	2	2	8	20	15	11	7	4	78	58	.....
9	3	0	0	5	0	2	1	14	8	5	5	2	45	39	.....
10	0	0	0	0	2	1	5	5	10	4	4	1	32	49	.....
11	0	1	1	0	1	0	2	7	6	8	4	2	32	58	.....
12	7	0	1	3	4	4	2	13	6	5	8	2	55	87	.....
13	3	2	2	1	0	1	5	5	6	6	5	4	40	58	.....
14	3	1	0	0	4	1	3	6	10	9	2	2	41	49	.....
15	0	4	0	0	1	2	0	6	6	5	2	5	31	58	.....
16	0	0	1	4	3	4	4	10	4	12	11	6	59	58	.....
17	3	5	4	2	1	0	2	14	7	6	8	0	52	68	.....
18	5	3	0	0	1	1	4	8	16	13	10	4	65	29	(5)
19	0	2	0	1	3	0	3	6	8	9	5	8	45	58	.....
20	1	3	0	1	2	2	5	9	4	7	13	5	52	58	.....
21	2	1	2	2	1	2	0	4	8	5	9	3	39	39	.....
22	0	4	1	2	0	0	3	7	5	6	7	5	40	49	.....
23	1	0	0	1	0	0	0	5	4	8	10	6	35	39	.....
24	1	0	2	0	1	1	1	8	6	2	4	2	28	49	.....
25	3	0	0	1	2	0	3	12	16	13	7	11	68	97	.....
26	2	5	2	0	0	2	6	13	6	3	3	2	44	68	.....
27	4	2	0	1	2	2	6	7	15	13	7	6	65	107	.....
28	0	1	0	0	2	1	2	4	3	8	4	4	29	68	(6)
29	3	4	0	1	0	5	2	7	16	20	6	4	68	78	.....
30	1	1	0	0	3	1	1	7	4	7	3	1	29	49	.....
31	5	2	0	1	0	1	0	8	10	29	24	7	87	68	.....
32	1	1	0	1	2	1	1	5	10	5	61	16	104	68	.....
33	8	1	3	1	1	1	1	10	13	9	10	3	61	68	.....
34	2	5	3	2	1	0	4	6	5	6	3	2	39	58	.....
35	3	2	0	0	0	2	0	7	4	6	4	5	33	49	.....
*Hospital	3	1	2	7	4	5	18	53	61	44	19	8	225	.....	.....
Elsewhere	1	0	0	0	0	0	1	14	9	0	8	3	36	.....	.....
Totals	90	77	31	49	49	57	112	359	385	353	313	165	2040	.....	.....

*Residence not stated.

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CASES OF SCARLET FEVER.

Reported by months and wards during 1910.

WARD	January	February	March	April	May	June	July	August	September	October	November	December	Total	Normal	(3) high (4) low
1	3	5	4	2	10	2	2	2	6	5	5	5	50	30	.....
2	8	10	9	7	8	7	1	0	6	3	2	4	65	60	.....
3	14	15	17	12	10	9	1	3	4	5	3	13	106	90	.....
4	12	12	12	9	18	12	7	13	3	15	23	10	146	180	.....
5	9	16	16	8	14	8	6	8	17	24	21	7	154	210	.....
6	21	24	28	31	21	14	8	1	11	14	35	33	241	120	.....
7	31	26	30	23	27	13	3	5	3	11	18	51	241	180	.....
8	27	17	31	22	31	31	17	37	28	29	19	21	310	210	.....
9	21	28	18	22	29	39	19	18	9	13	22	29	277	150	.....
10	14	16	31	16	41	45	19	7	16	13	8	21	247	180	.....
11	17	14	14	15	11	13	4	7	6	13	14	13	141	210	.....
12	26	12	17	23	15	23	8	8	6	14	19	15	186	330	.....
13	15	17	25	17	16	26	8	3	13	7	12	11	170	120	.....
14	15	18	15	12	7	20	4	6	10	12	9	17	145	150	.....
15	21	25	25	11	23	21	10	4	3	12	16	18	189	180	.....
16	19	4	21	9	8	7	8	8	3	9	11	7	114	360	(4)
17	15	13	15	16	21	11	8	5	3	9	11	15	142	210	.....
18	11	10	9	2	3	9	4	5	0	4	2	4	63	30	(3)
19	13	18	12	20	42	29	21	12	13	13	26	35	254	180	.....
20	31	27	24	42	18	25	11	7	4	6	17	28	240	120	.....
21	6	22	19	9	6	9	4	2	0	1	8	8	94	60	.....
22	20	22	13	10	12	6	5	3	10	5	12	8	126	150	.....
23	20	19	15	13	9	7	2	8	2	6	11	6	118	120	.....
24	20	19	18	32	13	13	0	8	2	1	3	5	134	180	.....
25	26	22	37	15	21	14	5	6	4	8	18	24	210	210	.....
26	37	32	31	28	23	27	12	14	4	13	18	17	256	210	.....
27	66	68	39	38	75	38	19	16	23	13	33	34	462	420	.....
28	17	22	32	16	11	11	13	12	14	6	21	7	182	210	.....
29	20	14	14	18	26	28	14	10	11	7	17	14	193	180	.....
30	19	18	8	9	13	8	9	9	5	14	25	16	153	180	.....
31	15	15	22	18	22	14	6	3	8	9	18	30	180	240	.....
32	13	17	10	25	19	7	4	3	4	5	12	35	154	210	.....
33	14	11	18	11	17	9	3	8	12	12	35	90	240	240	.....
34	25	17	15	10	16	25	15	4	1	10	21	24	183	210	.....
35	18	26	21	24	17	17	7	9	2	15	9	21	186	180	.....
*Hospital	9	2	5	6	5	2	5	4	4	7	17	3	69	.....	.....
Elsewhere	1	0	0	2	0	0	0	0	0	0	3	2	8	.....	.....
Totals	688	673	690	603	678	599	292	278	270	363	584	711	6429	.....	.....

*Residence not stated.

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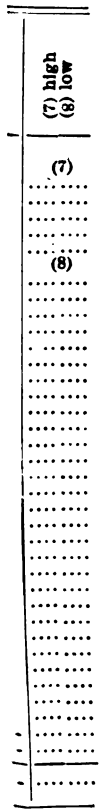

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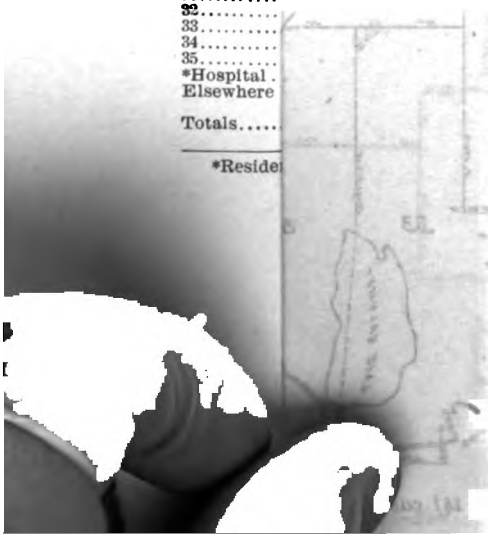
35	
*Hospital	
Elsewhere	
Totals	

*Reside



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CASES OF TUBERCULOSIS.

Reported by months and wards during 1910.

WARD	January	February	March	April	May	June	July	August	September	October	November	December	Total	Normal	(7) high (8) low
1	31	19	28	27	19	62	25	3	3	22	31	38	308	86	(7)
2	16	9	15	15	14	21	24	4	1	28	19	22	188	115	.....
3	10	10	9	10	17	8	10	3	3	16	13	7	116	115	.....
4	19	15	15	15	17	12	16	10	13	31	18	29	210	144	.....
5	9	14	10	21	13	18	11	10	23	13	16	17	175	144	.....
6	5	2	7	3	14	13	8	2	11	10	10	12	97	202	.....
7	13	10	17	3	8	16	4	12	4	8	16	10	121	259	(8)
8	13	10	6	13	13	11	9	5	8	7	16	14	125	173	.....
9	7	10	5	18	15	12	13	24	21	16	17	17	175	115	.....
10	14	7	17	14	16	18	13	17	15	30	19	12	192	144	.....
11	11	12	11	16	19	22	14	14	16	28	20	16	201	173	.....
12	14	10	15	19	15	17	14	11	18	23	20	14	190	259	.....
13	5	10	9	8	14	11	10	13	6	11	14	12	122	173	.....
14	12	10	13	11	16	14	10	6	8	22	20	10	151	144	.....
15	9	7	8	13	15	8	11	7	16	10	11	14	129	173	.....
16	8	14	13	10	13	23	18	12	24	17	13	12	177	173	.....
17	13	17	13	8	12	17	20	14	12	23	19	27	195	202	.....
18	19	32	13	19	14	35	22	1	6	29	24	26	240	86	.....
19	11	24	19	28	16	20	19	26	23	18	21	26	261	173	.....
20	17	14	13	13	22	17	20	13	10	11	8	14	172	173	.....
21	10	23	16	19	30	26	22	5	4	15	23	19	212	115	.....
22	17	29	23	17	13	24	23	11	8	18	21	17	221	144	.....
23	1	10	10	8	13	5	3	6	7	6	5	21	95	115	.....
24	7	10	11	8	11	18	9	9	12	26	13	19	153	144	.....
25	5	11	18	11	10	6	2	12	27	21	13	14	150	288	.....
26	6	7	9	12	10	11	10	37	16	3	7	15	143	202	.....
27	5	13	16	15	13	17	11	16	24	22	13	23	188	317	.....
28	8	11	10	5	11	13	13	15	21	10	15	11	142	202	.....
29	18	37	11	24	12	17	13	15	32	18	19	17	233	230	.....
30	16	15	13	17	22	24	12	14	16	10	11	18	188	144	.....
31	11	16	17	13	13	18	9	12	8	17	14	18	166	202	.....
32	10	6	7	10	10	4	3	10	8	13	12	12	105	202	.....
33	6	7	5	7	15	7	5	6	12	7	9	13	99	202	.....
34	5	8	6	5	5	8	14	14	17	7	6	12	107	173	.....
35	6	5	10	3	8	6	10	11	13	6	8	6	92	144	.....
*Hospital	5	9	8	5	18	16	35	2	3	36	22	9	168	.....	.....
Elsewhere	0	0	5	5	4	7	0	1	1	0	8	27	58	.....	.....
Totals	392	473	450	470	520	602	484	402	470	608	564	620	6055	.....	.....

*Residence not stated.

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SUMMARY OF MEDICAL INSPECTIONS, INVESTIGATIONS, ANTITOXIN ADMINISTRATIONS, ETC., FOR THE YEAR 1910, BY MEDICAL INSPECTORS.

	Smallpox Suspects	Contag. Dis. Suspects	Antitoxin Calls	Field Calls	Premises Placarded	Premises Disinfected	Quarantine Calls
January	18	282	40	4618	1866	1420	4134
February	9	334	44	4681	2102	1213	3562
March	9	526	52	4903	3100	1868	3659
April	9	506	69	8153	3404	1278	3164
May	29	568	50	7257	3480	1360	2981
June	20	428	49	7474	2712	1298	3704
July	6	300	46	4892	1395	1202	3334
August	7	281	38	4699	991	841	3546
September	4	217	34	4497	860	810	4202
October	8	232	40	5736	1164	1162	5018
November	10	315	65	8386	1906	1368	4790
December	26	538	74	11236	2913	1896	7597
Total	155	4,527	601	76,532	25,883	15,821	49,561

HEALTHGRAMS.

From *The Bulletin.*

Hygiene is humanity's hope.

* * *

Build your reputation for civic pride in your back yard.

* * *

Gardens are more conducive to health than houses.

* * *

A day in the parks may save weeks in the hospital.

* * *

Defective sanitation means a defective civilization.

* * *

Make your neighbor's front yard jealous of your back yard.

* * *

The trees and the grass are making life-giving air for you. Go get it.

* * *

There's some consolation in the thought that it's healthier to walk than to ride in automobiles.

* * *

Seats for women employes and opportunity to use them would leave many hospital beds vacant.

* * *

"Hygiene aims to make growth more perfect, life more vigorous, decay less rapid, death more remote."

* * *

Because your neighbor throws garbage in the alley is no reason why you should follow his example—it's a reason why you should set him a good example.

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METHOD OF HANDLING SMALLPOX IN CHICAGO.

During the four years 1907 to 1910 inclusive, 227 cases of smallpox were treated in the Isolation Hospital. Most of these cases were found in Chicago; a few cases were sent to the hospital from adjoining suburban towns; one, a newly arrived emigrant child, was found dead at home. Of the 228 cases only 24 had ever been vaccinated and these were adults who had been vaccinated in childhood, and never revaccinated.

Chicago hospitalizes all cases of smallpox, the method in vogue being as follows:

When notified of a suspected case of smallpox the medical health officer goes to the case forthwith. An hour's delay may result in many needless exposures.

The following suggestions as to conduct in the presence of smallpox are observed so far as the circumstances of the case will permit with safety, the health officer being required to supply any deficiency in instructions which the individual case may demand for public safety:

When entering a house in which there is a suspected case of contagious or infectious disease, do not remove your hat or overcoat, keep the overcoat buttoned.

Do not shake hands with any one in the house. Do not sit down or touch anything in the house and especially avoid touching the patient or bed clothing. To expose the patient for examination call upon the patient or some one present to remove the patient's clothing for you. When leaving the house have some one open the door so as to avoid touching an infected doorknob.

Except to vaccinate the inmates of the house, it is not necessary to touch anything about the premises, excepting the floor, with the soles of your shoes.

If these precautions are observed there is no danger of carrying the disease to others.

When it is determined the case is one of smallpox, fill out the history blank provided for the purpose, telephone the information to the Department and promptly mail the filled blank to the chief of the bureau of contagious diseases.

Telephone instructions as to the disposal of the case, whether an ambulance or a carriage is needed, the amount of disinfecting to be done and the number of vaccinators needed.

In filling out the blank, secure a list of all who have been exposed in any way to the contagion since the first day of the sickness; learn if letters or laundry have been sent out from the house, if so,

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where and to whom sent; give the vaccinal status of those exposed, so far as you can.

It is the duty of the medical health officer to vaccinate, or see that some other officer vaccinates, all who are known to be exposed to the infection. Do not leave or allow this duty to be done by the family physician. It is the duty of the health officer to secure the consent of the patient or family for the removal of the patient to the isolation hospital. Do not leave this duty to the ambulance driver.

Until the ambulance comes, the case must be made safe. If it is necessary to police the house to secure safety, do so. After securing the prompt vaccination of all exposed persons it is the health officer's duty to see the exposed every other day for fifteen or twenty days. If the first vaccination does not take, repeat until it does take.

If there be doubt as to the diagnosis, vaccinate the inmates of the house, make the case safe to others and see the patient later.

A medical health officer must be courteous and tactful in carrying out the Department regulations in cases of smallpox. He should be complete master of the situation, able to dispose of complications and duties as they arise. He should secure compliance with the ordinance without force, if possible, but if necessary use police power.

After the patient is removed to the hospital the premises are disinfected. All who have been exposed must be kept where they can be seen by a health officer every other day for twenty days. If the exposed keep in touch with the health officers as indicated above, they can go about their business. No quarantine is needed for those exposed until symptoms of the disease are noticed. After the twelfth day following exposure, they should remain in the house until it is certain they have escaped the disease.

When a case of smallpox is discovered it is our custom to vaccinate every one within two blocks of the infected house in each direction. If the case is found in a lodging house, the lodging house population of the city must be vaccinated and kept under close watch. Nightly visits must be made to these houses to vaccinate new arrivals. Those who die of smallpox are buried by the Department officials in any cemetery designated by the relatives.

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Cases of Smallpox, by Years, 1899-1910.

Showing the vaccinal status and number of deaths from this disease.

YEAR	Cases of Smallpox	*Died	Never Vaccinated	*Vaccinated
1899	25	1	24	1
1900	52	2	48	4
1901	276	4	237	39
1902	339	5	318	21
1903	389	47	339	50
1904	358	28	311	47
1905	546	61	402	144
1906	23	0	21	2
1907	94	0	82	12
1908	82	0	74	8
1909	25	0	23	2
1910	31	1	29	2
Totals	2240	149	1908	332

*None died who were vaccinated; none of the 332 who are shown as "vaccinated" had ever been revaccinated.

HEALTHGRAMS.

From *The Bulletin.*

Our one first duty—to keep well.

* * *

Strong drink makes weak men.

* * *

High living develops a low vitality.

* * *

The simple life is the best defense against disease.

* * *

Late and heavy eating makes light and troubled sleeping.

* * *

So-called chest protectors are targets for colds and coughs.

* * *

An artificial mode of life leads to an unnatural death.

* * *

Robbing oneself of sleep is putting a mortgage on future health and happiness. Nature will foreclose.

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STATISTICAL SUMMARY OF THE WORK OF ALL DIVISIONS: 1907-1910.

Bureau of Contagious Diseases.

Summary of contagious diseases reported during the years 1907-1910.

	1907	1908	1909	1910
Diphtheria	5358	5439	5658	7961
Mumps	.....	.....	.....	1260
Scarlet fever	8856	3305	6242	6427
Cerebro-spinal meningitis	.....	.....	.....	64
Smallpox	90	77	25	31
Puerperal fever	.....	.....	.....	43
Measles	3531	6691	8060	10,980
Erysipelas	.....	.....	.....	490
Chickenpox	374	1475	2479	1854
German measles	.....	.....	.....	969
Influenza	.....	.....	.....	10
Pneumonia	.....	1499	1417	1917
Infantile paralysis	.....	.....	.....	19
Typhoid fever	549	3228	1961	2050
Diarrheal diseases	.....	.....	.....	77
Whooping cough	410	1135	1826	2552
Tetanus	.....	.....	.....	2
Tuberculosis	919	2577	4089	6121
Others	243	608	2047	3
Totals	20,330	28,034	34,704	42,770

Division of Disinfection and Quarantine.

	1907	1908	1909	1910
Premises placarded	14,171	16,783	21,020	25,383
Premises disinfected	15,072	12,753	14,952	15,821
Area disinfected—cubic feet (estimated)	80,112,099	65,787,250	69,082,200	79,409,000
Quarantine calls	.....	.....	.....	49,581

Division of Contagious Disease Hospitals.

	1907	1908	1909	1910
Diphtheria Hospital: (Opened November 27, 1908)				
Cases received	.....	65	1166	1430
Discharged cured	.....	37	1004	1271
Died	.....	4	99	133
Under treatment at close of years	.....	24	87	113
Smallpox Hospital:				
Smallpox patients received	94	82	25	31
Discharged cured	94	82	21	29
Died	0	0	0	1
Under treatment at close of years	0	0	4	5
Vaccinal Status of Cases:				
Never vaccinated	82	74	23	29
Recently vaccinated	0	0	0	0
Vaccinated early in life—(never revaccinated)	12	8	2	2
Colored persons included in above	30	30	0	3
Colored persons never vaccinated	30	30	0	3
Sources of Infection:				
Imported cases	21	36	17	10
Infected by imported cases	22	15	6	10
Infection not traced	51	31	2	9

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DIVISION OF SCHOOL MEDICAL INSPECTION.

	1907	1908	1909	1910
(a) INSPECTION FOR CONTAGIOUS DISEASES:				
Number of pupils examined	377,599	499,046	647,842	820,055
Number excluded	24,708	27,158	15,618	14,553
Per cent of examined pupils excluded	6.5%	5.4%	2.4%	1.8%
Causes of exclusions (cases and contacts):				
Diphtheria	633	358	339	708
Scarlet fever	1456	532	770	579
Measles	3238	1235	742	1004
German measles	.....	.....	.....	377
Chickenpox	982	1356	1711	1010
Mumps	2965	390	1635	1128
Whooping cough	652	272	320	298
Smallpox	.....	2	.....	.....
Tuberculosis	9	72	29	9
Pediculosis	1747	3044	1770	1455
Impetigo	1306	2983	1838	986
Conjunctivitis, purulent	362	611	1219	672
Scabies	912	913	838	579
Favus	.....	47	84	83
Tonsillitis	5199	4605	2394	2957
Acute coryza	.....	200	73	143
Ringworm	.....	358	1003	494
Trachoma	.....	34	28	10
Other affections	6147	10,096	825	2161
Cultures made for bacterial examination	1539	796	1751	9634
Vaccinations performed	31,936	24,677	28,715	26,404
(b) PHYSICAL EXAMINATIONS OF SCHOOL CHILDREN:				
(Begun June 12, 1908)				
Number pupils examined	.....	45,365	123,897	120,301
Number found defective and treatment advised	.....	21,039	63,199	53,868
Per cent found defective	.....	46.4%	51%	44.8%
Defects found:				
Nutrition	.....	1148	2983	2399
Anemia	.....	1421	3606	2979
Enlarged glands	.....	5843	16,945	16,639
Nervous diseases	.....	252	486	564
Cardiac diseases	.....	421	816	576
Pulmonary diseases	.....	205	425	173
Skin diseases	.....	664	2503	1955
Orthopedic	.....	465	1433	916
Rachitic type	.....	.....	23	124
Vision	.....	7570	21,824	18,941
Other eye diseases	.....	.....	32	439
Hearing	.....	1043	2830	1916
Discharging ear	.....	.....	13	208
Nasal breathing	.....	1751	6524	5032
Palate	.....	156	273	422
Teeth	.....	13,838	44,483	43,922
Hypertrophied tonsils	.....	9446	27,556	24,286
Adenoids	.....	1654	4088	4702
Mentality	.....	450	615	313
Goitre	.....	.....	50	335
Defective speech	.....	.....	1	1
Epilepsy	.....	.....	1	.....
Others	.....	.....	.....	5
Total	.....	46,327	137,600	126,847

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DIVISION OF SCHOOL MEDICAL INSPECTION.—*Continued.*

		1908	1909	1910
(c) SCHOOL NURSE SERVICE: (Inaugurated October 12, 1908)				
Visits made—total		21,640	89,612	80,732
To schools		3588	14,766	15,421
To homes of pupils		17,039	70,078	59,646
Miscellaneous		1013	4768	5665
Number children seen		22,055	108,063	89 394
CHILDREN EXAMINED ON ROUTINE INSPECTION AT SCHOOLS—TOTAL		21,987	190,966	133,531
Referred to medical health officer for diagnosis		2980	16,667	11,623
Children sent to dispensaries for treatment		1439	9322	7873
Children sent to family physicians for treatment		2275	13,495	9562
Children sent to Visiting Nurse Association		221	743	641
Children sent to Chicago Bureau of Charities for relief		38	221	263
Children sent to Chicago Relief & Aid Society for relief		53		
Children sent to County Agent for relief		99	211	199
Children sent to Hospitals			1022	779
*United Charities (1909)				
TREATMENTS APPLIED BY NURSES UNDER PHYSICIANS' DIRECTION—TOTAL		8478	40,528	60,866
Adenoids and tonsils				11
Pediculosis		2430	4047	4497
Ear				772
Eye		226	1530	1675
Tuberculosis				249
Ringworm		222	7572	12,047
Adenoids				51
Scabies		342	2691	692
Impetigo		2534	11,522	15,841
Favus		89	177	264
Teeth			223	162
Tonsils			194	58
Miscellaneous		2635	12,572	24,547
OPERATIONS, ATTENTION TO TEETH AND EYES—(Nurse taking child to physician, dentist, etc.):				
Adenoids and tonsils				664
Eye				71
Ear				26
Tuberculosis				8
Teeth				1207
Adenoids				171
Tonsils				403
Eye Glasses				2683
Unclassified				238

MISCELLANEOUS.

	1907	1908	1909	1910
Contagious disease ambulance trips	1512	1809	2458	2259
Investigations made by health officers	10,455	27,006	2347	4527
Suspected cases of smallpox investigated	204	188	101	155
Antitoxin administered (number of calls)	853	846	743	601

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INFANT WELFARE SERVICE

1909-1910

DEPARTMENT OF HEALTH,
UNITED CHARITIES, and
VISITING NURSE ASSOCIATION
Co-operating

DR. CAROLINE HEDGER
In Charge

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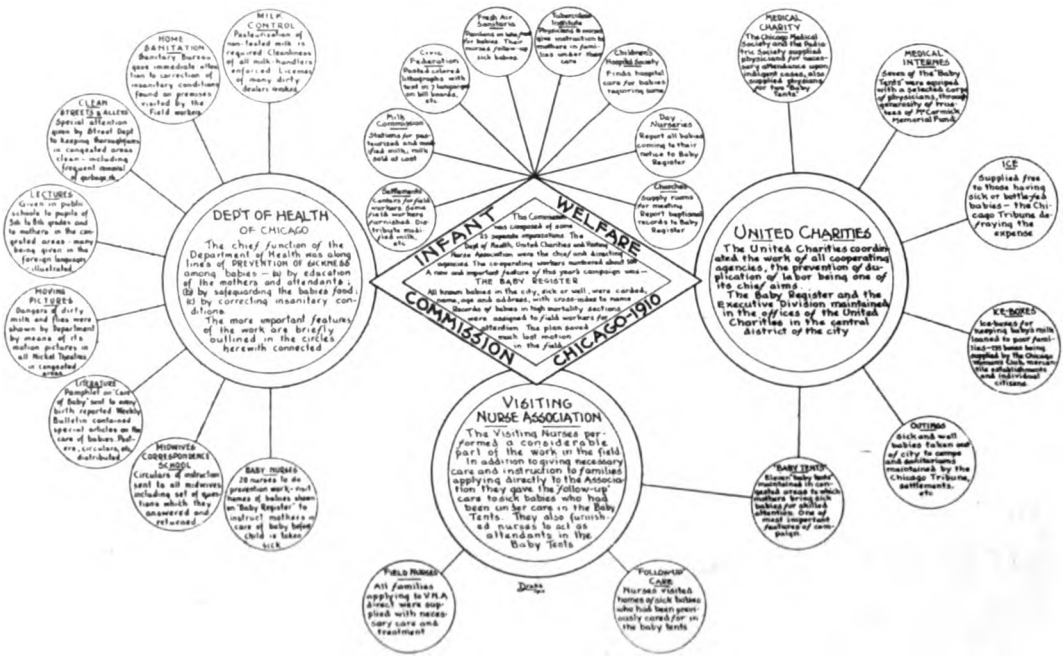
CO-OPERATION TO SAVE THE BABIES IN CHICAGO

PLAN OF ORGANIZATION - 1910


DEPT OF HEALTH
OF CHICAGO
The chief function of the Department of Health was along lines of PREVENTION OF SICKNESS among babies — (a) by education of the mothers and attendants; (b) by safeguarding the babies food; (c) by correcting insanitary conditions.
The more important features of the work are briefly outlined in the circles hereunto connected
MILK CONTROL
Pasteurization of non-tested milk is required. Cleanliness of all milk handlers enforced. Licenses of many dirty dealers revoked.
HOME SANITATION
Sanitary Bureau gave immediate attention to correction of insanitary conditions found on premises visited by the Field workers.
CLEAN STREETS & ALLEYS
Special attention given by Street Dept to keeping thoroughfares in congested areas clean - including frequent removal of garbage &c.
LECTURES
Given in public schools to pupils of 5th to 8th grades and to mothers in the congested areas - many being given in the foreign languages illustrated.
MOVING PICTURES
Dangers of dirty milk and flies were shown by Department by means of its motion pictures in all Nickel Theatres in congested areas
LITERATURE
Pamphlet on Care of Baby sent to every birth reported. Monthly Bulletin contained special articles on the care of babies. Posters, circulars, etc. distributed.
MIDWIVES CORRESPONDENCE SCHOOL
Circulars of instruction sent to all midwives, including set of questions which they answered and returned.
BABY NURSES
20 nurses to do prevention work - visit homes of babies shown on Baby Register - to instruct mothers in care of baby before child is taken sick
INFANT WELFARE COMMISSION CHICAGO-1910
The Commission was composed of some 35 separate organizations. The Dept of Health, United Charities and Visiting Nurse Association were the chief and directing agencies. The co-operating workers numbered about 500.
A new and important feature of this year's campaign was —
THE BABY REGISTER
All known babies in the city, sick or well, were carded, name, age and address, with street-index to name.
Districts of babies in high mortality sections were assigned to field workers for investigation. The plan points to much lost motion in the field.
Fresh Air Sanitaria
Provisions on long trial for babies. Their nurses follow up sick babies
Tuberculosis Institute
Physicians & nurses give instruction to mothers in families where cases of tuberculosis exist
Children's Memorial Institute
Provides hospital care for babies requiring same
Civic Federation
Posted colored lithographs with text on 7 lamp-posts on 181 boards, etc.
Day Nurseries
Report all babies coming to their notice to Baby Register
Milk Commission
Stations for pasteurized and modified milk, milk sold at cost
Churches
Supply rooms for meeting. Report baptismal records to Baby Register
Dispensaries
Contracts for field workers. Some provide workers. Distribute modified milk, etc.
VISITING NURSE ASSOCIATION
The Visiting Nurses performed a considerable part of the work in the field. In addition to giving necessary care and instruction to families applying directly to the Association they gave the 'follow-up' care to sick babies who had been under care in the Baby Tents. They also furnished nurses to act as attendants in the Baby Tents
FIELD NURSES
All families applying to VNA direct were supplied with necessary care and treatment
FOLLOW-UP CARE
Nurses visited homes of sick babies who had been previously cared for in the baby tents
UNITED CHARITIES
The United Charities coordinated the work of all cooperating agencies, the prevention of duplication of labor being one of its chief aims
The Baby Register and the Executive Division maintained in the offices of the United Charities in the central district of the city
MEDICAL CHARITY
The Chicago Medical Society and the Public Health Society supplied physicians for necessary attendance upon indigent cases, also supplied physicians for two 'Baby Tents'
MEDICAL INTERNES
Seven of the 'Baby Tents' were equipped with a detached corps of physicians, through generosity of Mrs. Cyrus McCormick Memorial Fund.
ICE
Supplied free to those having sick or bottle-fed babies — the Chicago Tribune defraying the expense
KE-BOBES
Ice-boxes for keeping baby's milk, loaned to poor families — 150 boxes being supplied by the Chicago Commons Club, managed by the settlements and individual citizens
OUTINGS
Sick and well babies taken out of city to camps and sanitariums maintained by the Chicago Tribune, settlements, etc
'BABY TENTS'
Eleven 'baby tents' maintained in congested areas to which mothers bring sick babies for skilled attention. One of most important features of campaign.

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INFANT WELFARE CAMPAIGN OF 1910.

In 1909 the baby welfare campaign was carried on by house to house visiting. In 1910 the plan was changed, house to house work being done only in the poorer wards, the Eighth, Sixteenth, Seventeenth and Twenty-ninth being completely covered. It was found that the new plan saved an enormous amount of work which had been wasted in previous campaigns. The 1910 campaign was based on the baby register of the United Charities, a card index being kept of all the babies located during the summer. Some of these names came from the county clerk's birth records, others came from charitable societies and settlement houses, the final lists being from the field nurses, who were instructed to "take the baby next door" every time.

More than ever before the campaign was a co-operative one, as may be seen from the chart showing the executive plan (Chart 1). The Health Department, the United Charities and the Visiting Nurse Association worked together in the Infant Welfare Committee, which included their representatives and other interested people.

Because of lack of funds, there were not enough nurses to cover the whole city. The Health Department furnished twenty, and three additional nurses were paid by Chicago University Settlement, the Presbyterian Hospital and South End Centre. The Visiting Nurse Association, in addition to their regular work, employed an extra worker to see the babies listed in the Thirty-fourth ward.

The Health Department nurses and the three special nurses were given the names of babies in the wards where the death rate was highest in 1909, viz: Fourth, Fifth, Eighth, Ninth, Tenth, Eleventh, Twelfth, Sixteenth, Seventeenth, Nineteenth, Twentieth, Twenty-second and Twenty-ninth wards. The nurses visited the mothers of these babies to instruct them in the prevention of summer diarrhea, doing house to house work in parts of the Eighth, Sixteenth and Twenty-ninth wards and in all of the Seventeenth ward.

There were ten baby tents located in centers having the highest baby death rates. These tents were supported by a grant from the Elizabeth McCormick Memorial Fund, controlled by the United Charities.

It was found that the field nurses had to do a great deal of nursing in the homes; out of 5,085 sick babies nursed through the summer, 1,758 were nursed in the tents (sent there by various agencies), the rest being nursed at home by the twenty-three field nurses. The care of the tent babies was under the supervision of the Visiting Nurse Association, this organization assuming also the reponsibility for their care after they were returned to their homes.

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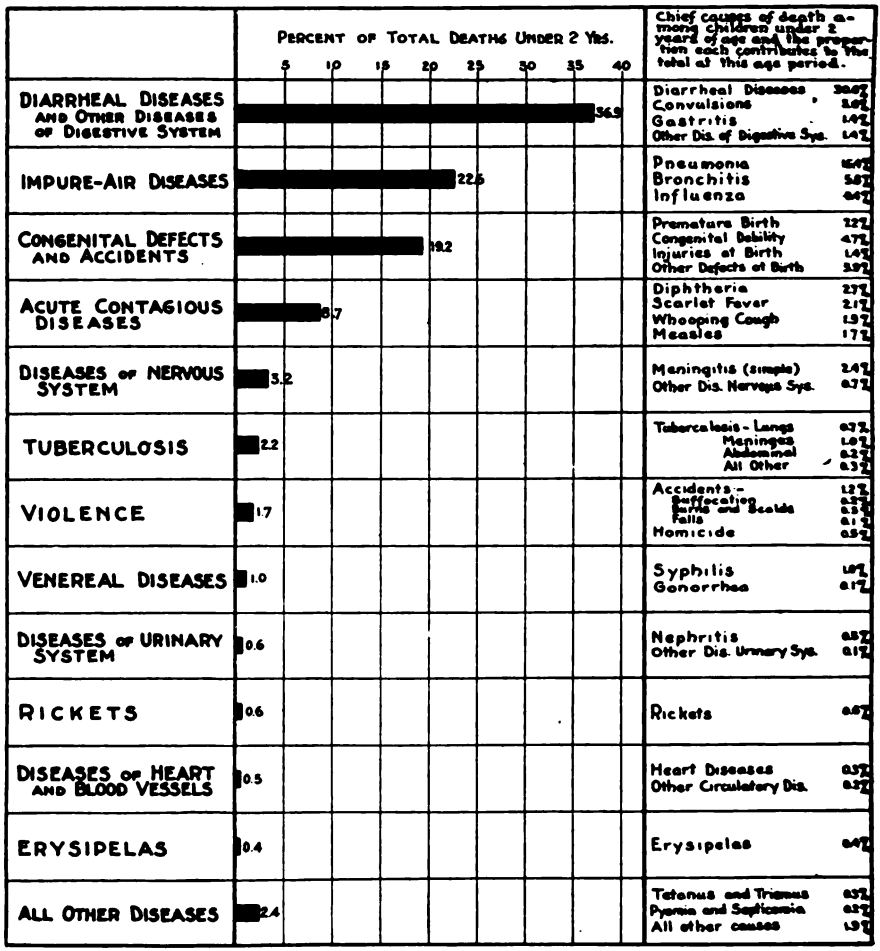
WHAT KILLS THE BABIES

THIS DIAGRAM SHOWS THE CHIEF CAUSES OF DEATH AMONG CHILDREN UNDER TWO YEARS OF AGE AND THE RATIO OF EACH CAUSE TO THE TOTAL DEATHS IN THIS AGE DIVISION.

In each 100 deaths among children under 2 years of age 37 are caused by diseases of the digestive system; 23 by the impure-air diseases; 19 by defects and accidents at birth; 9 by acute contagious diseases; 3 by diseases of the nervous system; 2 by tuberculosis; 2 by violence; 1 by venereal diseases; etc.

70 PERCENT OF SUCH DEATHS CAN BE AVOIDED – WITH PROPER CARE



DEPARTMENT OF HEALTH,
CHICAGO.
Popular Education Series
No. 5

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The twenty Health Department nurses and the three special nurses cared for and instructed the mothers of 23,984 babies during the summer. It is estimated that they instructed about 15,000 families, mainly Polish, Italian, Bohemian and German, those handicapped in the matter of language using interpreters. In addition to their instructional and nursing work the field nurses carried ice coupons, procured milk and supplies for needy families through the United Charities, the Jewish Aid and other sources, and started various organizations working on delinquent cases. Another feature of their work was reporting on the sanitary condition of their wards. Five hundred sanitary complaints were filed by them during the summer and through co-operation with the sanitary bureau and the bureau of streets and alleys notable improvement was effected in several wards.

The field nurses made daily and weekly reports of their work to the director, and at the end of September brought in their season's reports of the condition of each family where there were babies under two years of age. The season's report was made in the form of the card herewith shown. From these final reports statistics of real value are tabulated.

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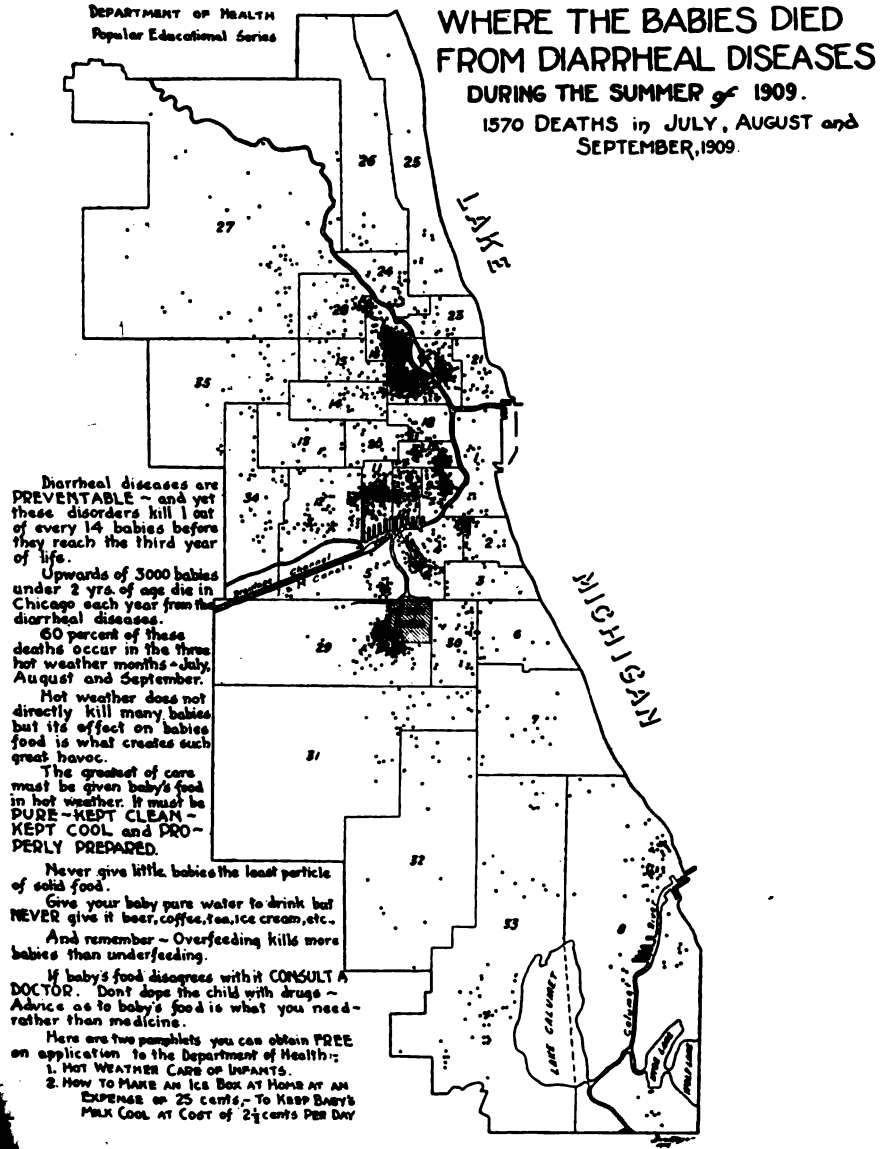
DEPARTMENT OF HEALTH
Popular Educational Series
WHERE THE BABIES DIED FROM DIARRHEAL DISEASES
DURING THE SUMMER of 1909.
1570 DEATHS in JULY, AUGUST and SEPTEMBER, 1909.
LAKE
MICHIGAN
Diarrheal diseases are PREVENTABLE ~ and yet these disorders kill 1 out of every 14 babies before they reach the third year of life.
Upwards of 3000 babies under 2 yrs. of age die in Chicago each year from the diarrheal diseases.
60 percent of these deaths occur in the three hot weather months ~ July, August and September.
Hot weather does not directly kill many babies but its effect on babies food is what creates such great havoc.
The greatest of care must be given baby's food in hot weather. It must be PURE ~ KEPT CLEAN ~ KEPT COOL and PROPERLY PREPARED.
Never give little babies the least particle of solid food.
Give your baby pure water to drink but NEVER give it beer, coffee, tea, ice cream, etc.
And remember ~ Overfeeding kills more babies than underfeeding.
If baby's food disagrees with it CONSULT A DOCTOR. Dont dope the child with drugs ~ Advice as to baby's food is what you need ~ rather than medicine.
Here are two pamphlets you can obtain FREE on application to the Department of Health:
1. HOT WEATHER CARE OF INFANTS.
2. HOW TO MAKE AN ICE BOX AT HOME AT AN EXPENSE OF 25 cents. ~ TO KEEP BABY'S MILK COOL AT COST of 2½ cents PER DAY
LAKE CALUMET
CALUMET RIVER

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(CARD 1)

Ward.....Street.....No.....

House.....Ft.....Rr.....Flat.....

Ft.....Mid.....Rr.....Floor.....1-2-3-B

NAME.....

Place Mother's Birth.....Occupation.....

Place Father's Birth.....Occupation.....

Children: Alive.....Ages.....Youngest Child Sex.....

General Condition.....Dead.....

Ages at Death.....Second Child Sex.....

General Condition.....Abortions.....

Feeding Youngest: Breast.....Breast and.....Comm.....

Pat. Fd.....Cow's Milk only.....Cow's

and.....Cond. Milk.....Water.....

Feeding Next Youngest:

If the Mother is Nursing what does she take to make milk?

Feeding: Regular.....Too often.....Night

Feedings.....How many?.....

Milk: Boiled.....Pasteurized.....Covered.....

Kept on Ice.....In Water.....

Bathing: Sponge.....Tub.....How often?.....

Clothing: Too much.....Too little.....

Stool: Color .....Consistency.....Blood.....

Mucous.....No. in 24 Hours.....

Sickness in House: Cases Diarrhea.....Tuberculosis.....

Chronic Cough.....Contagious.....Skin.....

LIVING ROOMS	PERF.	ALLOW	SURROUNDINGS	PERF.	ALLOW
Cleanliness: Deduct when Unclean Floors 4, Walls 3, Ceilings 3, Ledges 3, Windows 2.	15		**Accumulations:** Within 50 feet: Garbage — Rubbish	15	
Ventilation: Adjustable Windows 6, No Odor 4.	10		**Yard and Areas:** Space available.	15	
Lighting: Deduct 2 Points for every 3 per cent. less than 15 per cent. of Floor Space.	10		**Plumbing on Premises:** Deduct when Leaking 4: Clogged 4: Odor 2.	10	
Presence of Flies:	15			40	
Crowding: Rooms, No..... Men.....Women..... Children..... Boarders.....	10		**Plus Living Rooms**	60	
	60		**Final Score . . .**	**100**	

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Substantial help in the summer's campaign came from the Civic Federation of Chicago, which put the telling poster, "Don't Kill Your Baby," on walls and fences in the densely populated wards. This poster, telling what the baby should and should not be fed, had a remarkable fascination for everyone who saw it, and the good it did is inestimable.

GRAPHIC STUDY OF

THE RELATION BETWEEN SUMMER MORTALITY AMONG CHILDREN AND DENSITY OF POPULATION AND NATIVITY

The centre section of the diagram shows the baby death rate under 2 years of age from the diarrheal diseases during the three summer months of 1909, by city wards, death rates computed on child population under 2 yrs.

The right hand section of the diagram shows the density of population – number of persons to each acre – for the city wards and the degree of shading indicates the general sanitary conditions of these wards as follows: –

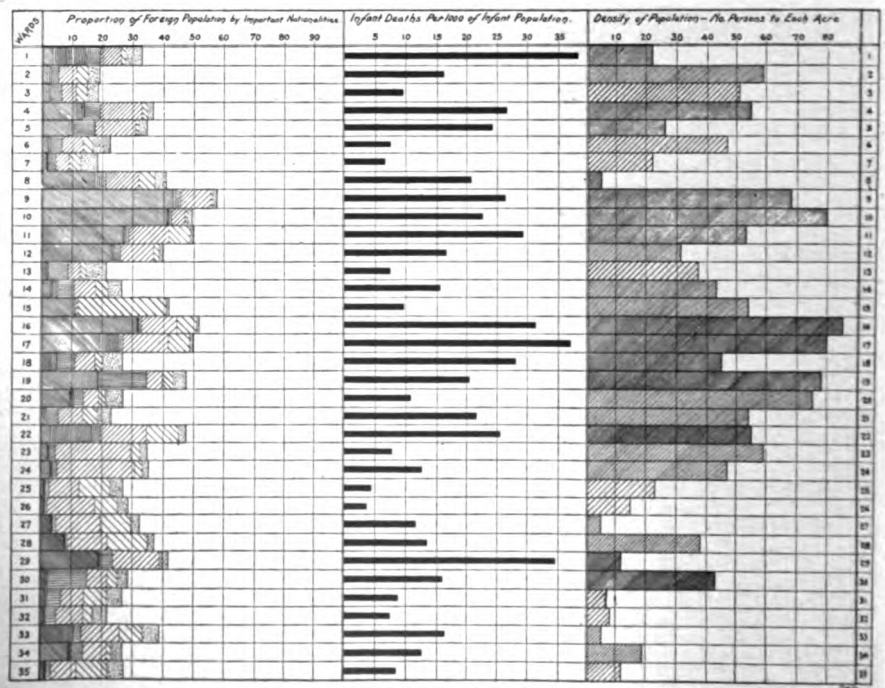
Good Fair Bad

The left hand section of the diagram shows the proportion of foreign born population in each ward – by important nationalities as follows: –

Slavs Italians Irish

Germans Scandinavians Other Foreign

The white portions beyond the colored sections represents the proportion of American born population


Proportion of Foreign Population by Important Nationalities.
10 20 30 40 50 60 70 80 90
Infant Deaths Per 1000 of Infant Population.
5 10 15 20 25 30 35
Density of Population – No. Persons to Each Acre.
10 20 30 40 50 60 70 80

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In reviewing the work carefully, we find that a saving was accomplished; for instance, in the Twenty-ninth ward, in 1910, the deaths numbered forty in August and forty-four in September, against forty-five in August and fifty-three in September in 1909. More than that, there were 579 sick babies cared for in the Twenty-ninth ward in 1910, as compared with 308 in 1909. It will be seen that in 1910, although there were more sick babies, there were fewer deaths in those parts of the city where the campaign was carried on.

In tabulating the baby death rate by wards we find that by grouping the wards according to the amount of work done in them we obtain some idea of the value of this work:

	Per cent increase in baby death rate.
Death rate in bad wards (covered).....	5.3
Death rate in fair wards (covered in part).....	11.7
Death rate in good wards (not covered).....	16

The Eighth and Twelfth wards were not included in the foregoing calculation of bad wards for the reason that very little of their territory was covered. The Eighth ward alone showed an increase of 100 per cent, and the increase in the Twelfth ward was 58 per cent.

In spite of good housing conditions, in spite of screens and education and good food, the best wards in the city led, as a whole, in proportionate increase of baby death rate. There were at least 6,000 babies registered with us from these wards, but we could not cover them for lack of nurses.

Infant Welfare Campaign of 1909.

Until 1909 no great or well organized effort for the control of diarrhea in infants had been undertaken in Chicago. We calmly accepted the annual harvest of death as if it were as inevitable as the weather; as if indeed a part of the weather. "Hot weather, babies die," was our unconscious thought. Gradually there arose the feeling that we could not afford this loss of life; that the sickness that produced this large number of deaths had other results of ill omen to the future citizen; that the disease, undoubtedly epidemic, had also social causes; that the disease could and must be prevented.

For some years the United Charities, then two organizations, made efforts to better the condition of babies. First, to get mothers and babies out of the city; second, to start centers in the city itself for the care of those sick and for the education of mothers at baby tents. The Children's Hospital Society, through a committee, established a milk commission to provide modified and pasteurized milk for babies at a reasonable price. No doubt these activities saved lives, but they were insufficient to cope with the problem; the death rate did not decrease.

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WORKING TO SAVE THE BABIES IN CHICAGO.

AGENCIES EMPLOYED IN THE SUMMER CAMPAIGN OF 1909.

THE DEPARTMENT OF HEALTH AND THE UNITED CHARITIES CO-OPERATING.

DEPARTMENT OF HEALTH
CITY OF CHICAGO

The Dept of Health acted as a "clearing house" enabling the affiliated organizations to work in harmony and without duplication of labor.

Portions of the city having congestion of population and high infant mortality were divided into districts. Each district was assigned to a cooperating organization, the latter providing field workers according to the requirements of the districts.

Field workers were instructed by experts in the feeding and care of children, the keeping and preparation of baby's, etc., thus enabling them to give proper and practical advice to mothers.

They were also supplied with literature on the care of the baby printed in 8 languages.

All cases of diarrheal diseases were reported daily to Department and from here assigned to proper organization for attention.

VISITING NURSES
Assigned to various districts, making house to house visits, giving instructions to mothers, especially noting sick children and seeing that needed attention was given.

Made daily report to Department of visits made, sick children found, and insanitary conditions noted.

DISTRICT MEDICAL INSPECTORS
Assigned to stations in the various districts, reporting daily to the Dept of Health investigated cases of sickness among babies in their districts. Diagnosed cases of sickness gave medical attention wherever and whenever found necessary in emergency only.

LECTURERS
Four special lecturers, each giving at least 6 lectures a week, talked to mothers in the congested districts on proper care of the baby, etc. the lectures being given in the language commonly spoken in the neighborhood and illustrated by stereopticon.

Literature also distributed among audiences.

MILK INSPECTION
Gave special attention to milk supply and milk handlers in congested districts - cleanliness being rigidly enforced. Investigated all diarrheal diseases during throughout city, reporting on food given, trustworthy of mothers, sanitary conditions of premises, etc.

SANITARY INSPECTION
Special attention given to the correction of insanitary conditions reported by the various field workers.

DISPENSARIES
Two free dispensaries established by the Dept of Health - one at Chicago Commons, the other at Seward Park. Milk Commission Station. Prescriptions filled for sick babies of indigent families. Report daily to Dept of Health.

HOSPITALS, FRESH AIR SANITARIUMS, ETC.,
Beds and all necessary care supplied free to sick babies of indigent families that were referred to them.

THE UNITED CHARITIES
OF CHICAGO

The United Charities, cooperating with the Department of Health relieved the latter of much administrative work.

The officers of this organization supervised the work of a large portion of the field forces, directing them as the necessity for services indicated.

CHICAGO MILK COMMISSION
Stations for distribution of pure milk for babies established in various parts of city.

Instructions in feeding given.

These stations were made district headquarters wherever possible.

SETTLEMENT HOUSES
District headquarters - wherever possible.

Maintained "Baby Tents" for distribution of prepared milk for baby feeding.

Three cows were kept in town, their milk being supplied to such children requiring special care.

Gave instructions to mothers and distributed literature.

VISITING NURSES
House-to-house work in congested districts, instructing mothers in care of children, locating sick babies and noting general sanitary conditions.

Reported daily, through the Dept of Health, to the United Charities.

CHICAGO MEDICAL SOCIETY
Furnished physicians who volunteered their services for charitable work among babies of indigent families, the United Charities first investigating to determine whether family was entitled to charity treatment.

INTERPRETERS
Accompanied nurses, physicians, and other investigators in the house-to-house work, when their services were required.

RELIGIOUS ORGANIZATIONS
Independent investigators made house-to-house visits, locating sick children, noting insanitary conditions and reporting same to the United Charities.

Also furnished church rooms and halls for lecture purposes.

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In 1908 the Health Department put one hundred doctors into the field in July and August for house-to-house visiting and instruction to mothers. Their work only served to demonstrate the magnitude of the task and to show that we had not yet found the way to do efficient work. Unfortunately, the records of the work were destroyed before any study had been made that would clearly show the points for attack in a future campaign.

In 1909 the United Charities, the Health Department and Visiting Nurse Association engaged in the work jointly. The Health Department from its statistics mapped out the areas of the highest death rate for previous years and furnished twenty nurses and fourteen doctors, spending ten thousand dollars on the campaign. The United Charities furnished nurses, tents, interpreters and social workers, their work in the main being made possible by the McCormick Memorial Fund, over five thousand five hundred dollars being used. The Visiting Nurse Association supervised tents, furnished nurses in the tents, and worked in the field. The general plan was house-to-house canvass by nurses in the most crowded and insanitary districts, where in previous years the most deaths occurred. Wherever small children were found, instruction in feeding and general care was given. In the beginning it was arranged that the Health Department nurses should act as finding agencies, turning the actual care of the sick babies over to the Visiting Nurses' Association, or the nurses of the settlements in the districts, or to the nurses of the United Charities who were traveling out from the stations of the Milk Commission.

The last week in July the epidemic began with such violence that the three last mentioned classes were overwhelmed. They simply could not cover the cases found for them, so the work was readjusted; the visiting nurse or the local and milk commission nurses took as many sick as they could care for, and the rest were cared for by the Health Department nurses in addition to their house-to-house visiting and finding. Through this readjustment and in especially bad areas, such as the Sixteenth and Seventeenth wards, some overlapping occurred. This was due to an effort to cover the ground and if possible save some babies. It was demonstrated that the last plan was the better plan, that one nurse on a case was more effective, as a rule, than two.

The nurses made a great effort to prevent friction with the medical profession and in one case only were there repeated reports of any such friction.

Considerably over 25,000 calls were made in eight weeks; 17,437 families were reported on cards more or less perfectly filled out; 2,857 sick children were dealt with, 2,057 being cases of diarrhea, 800, other diseases.

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Cases found in the house-to-house visiting were handled as well as was possible. Some families were refractory, would not improve feeding methods, wished no interference. More difficulty was found in getting the desperately sick ones to hospitals and sanitariums. The foreign mother is timid and afraid to leave home, and more afraid to let the baby go. By far the larger number of mothers are anxious to do right, but are ignorant and unable to do the best by their babies.

The nurses, as a whole, had insufficient training in the making of cards and in the placing of cases. Picnics were given for mothers and babies in parks, and audiences for lectures were procured by the nurses. The spirit of the corps was fine.

The baby tents in July, August and September cared for 1,330 patients, and the visits made in connection with the baby tent work totaled 3,583. With the shifting population in the field work, the final result cannot be given.

DISTRIBUTION OF THE CASES AMONG DIFFERENT NATIONALITIES REPORTED AT BABY TENTS.

Nationalities	No. of Cases.
Polish	445
American	338
Jewish	95
German	28
Bohemian	59
Hungarian	11
Russian	28
Lithuanian	67
Slovak	9
French	4
Irish	4
Spanish	1
English	1
Belgian	1
Italian	1
Roumanian	7
Swedish	2
Greek.	1

The number of diarrheal disease cases:

Enteritis	318
Gastro-enteritis	115
Diarrhea	107
Cholera infantum	1
Dysentery	1

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This classification on anatomic grounds is hardly a defensible one. These cases were all manifestations of one of two processes, a toxic process, or an infection in the intestinal tract. This shows the need of further work along bacteriologic lines, that we may dwell upon the etiologic rather than the pathologic aspect of the disease.

Early in the spring Mrs. Henrotin devised, financed and superintended an exhibit on the care of babies, which traveled about the city. The work was in charge of Miss Jeffek, who speaks the Slavic languages. This was an educational measure of undoubted value, as it showed inexpensive and practical appliances while teaching baby hygiene. Work done in this exhibit: Total number lectures given, 30; settlements visited, 14; mothers attending, 484; girls, 545; boys, 10; babies, 206; total attending, 1,245.

Summer diarrhea of infants involves two separate problems:

1. The bacteriologic—It is a well known fact that an immense amount of work is being done along this line. Nor is this view of the disease a hopeless one. One by one the infectious diseases yield to serum or vaccine treatment; we may reasonably hope for such an advance that the summer diarrhea of babies can be handled in this manner.

2. The social problem—The individual will welcome any minimizing or curative treatment of the disease but society demands the eradication of those causes constantly acting which produce the disease. Nor is this impossible. The reduction of typhoid in Chicago by improved water supply is a suggestion of the possibility of society protecting itself against fatal bacterial invasion. Summer diarrhea is, however, an immeasurably larger problem than typhoid and more factors enter into it. One of the greatest problems is the food of the baby.

A study of 7,962 cards by Dr. McMahon shows the following:

Food of All Children Sick and Well.

	Mother's Milk.	Cow's Milk.
Children well	2,759	3,363
Children sick	701	1,139
Total	3,460	4,502

The point to be emphasized in this summer campaign work is the large percentage of those receiving other food with breast milk. No data were given as to whether this was a necessity nor was the nature of the food recorded. It was a matter of observation, however, that often the most deleterious and indigestible food was given to babies. In addition it was observed that bad habits of nursing in strictly breast-fed babies were prevalent.

Doubtless these two factors combine to produce a condition of affairs in which nearly as many sick babies are found on breast milk as on artificial food. And the menace of the situation is well shown

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in the fact that only twenty-three per cent of both sick and well are breast fed.

In considering the subject of mortality in relation to feeding we must consider the keeping of milk. The records on this point are incomplete, but in every instance the number of babies fed well-kept milk falls considerably below the number of babies fed poorly-kept milk. A large proportion of the milk is badly kept. In one ward only, the Twenty-ninth (the stock yards ward), does it appear that the small number of cases in which milk was kept cool might have a relationship to the high death rate; in the other wards the small numbers follow too closely the amount of milk used to draw any deduction. In the Twenty-ninth ward, however, the absence of ice or ice boxes is so general that it might well influence the morbidity rate, hardly the mortality rate, as the Seventeenth ward, with apparently equal amounts of milk well and poorly kept, has a higher death rate and smaller number of cases.

Newsholme, in his Article on "Domestic Infection and Summer Diarrhea," states that good milk containing only 30,000 bacteria to the cubic centimeter may contain twenty-five billion after twenty-four hours at 35 degrees centigrade. The Milk Commission milk, with which an effort is made toward careful handling, is much of it fifty hours old when it is consumed and passes through four hands, with much transportation on rail and wagon. Probably the cow's milk where no special effort is made is nearly as old and more highly contaminated. The Health Department last summer examined numbers of samples of milk in the neighborhoods where the diarrheal diseases were most prevalent. During the height of the epidemic, the last days in July, some samples taken showed every commercial milk examined to contain more than 100,000 bacteria per cubic centimeter; and it is only a decent requirement that really clean milk should not have over 30,000 bacteria.

Of course, the bacterial content of milk depends on:

1. Original cleanliness in handling the milk, or the number of germs originally present in the milk.
2. Length of time between cow and consumer; that is, the time the bacteria have to multiply.
3. Temperature at which milk is kept, moderately high temperature, above 40 degrees Fahrenheit, being favorable for the growth of this form of plant life.
4. Subsequent infection of milk in the homes.

The Health Department struggles with the first requirement, demanding cleanliness in the dairies, and pasteurization of the milk. As an emergency measure, until clean milk can be produced in sufficient quantity, pasteurization must be urged. Its advantages and disadvantages are too well known to need repetition.

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No systematic effort has yet been made to shorten the time between the cow and the baby. The experience of Buenos Aires should encourage great effort to supply the necessarily bottle-fed babies with milk less than eighteen hours old. The Milk Commission's work and the Chicago Tribune's free ice fund are efforts in the direction of keeping the milk cool. Such efforts, as well as the providing of cheap ice boxes, should be encouraged. The care of milk in the home is a hygienic and educational work of great magnitude and must be attacked by all interested.

The type of the disease in the summer of 1909 was severe:

Mild	1,079
Severe (39%)	424
Unknown	554

Number of cases beginning each month in 1909:

May	61
June	196
July	552
August	94
September	94

The chronic nature of the disease is well shown by the statement that 602 cases had been sick several days when the patient was first seen, and 797 cases had been sick several weeks.

An effort was made the last week in which the nurses worked to find and report on every case that had been cared for during the summer. This was impossible; many had moved and we know of no experience that has given such a vivid impression of a shifting population as this very campaign. The rapidity of the shifting may be judged by two or three illustrations. During the month of August the Health Department gave out a list of 300 births recorded as having occurred in the Twenty-ninth ward within the twelve months preceding. One-half of these were found after hunting. Our inability to find babies at the end of the season that had been under the care of the nurse during the summer illustrated the same tendency. Of those found, 122 had died and 1,131 had recovered, showing a death rate of 10 per cent. This result gains added weight when one takes into account the conditions of the families living in tenements, the large portion of foreign mothers and the home care.

Another factor that enters into the feeding of the foreign child, in addition to the beer, coffee, sausage and sauerkraut that bring him to his untimely end, is the absence of water; among the sick babies 243 were found who received no water.

The matter of the mother working away from home was a factor of little consequence in this particular epidemic. Only 107 mothers were reported as working outside the home.

Niven and Glover both wrote concerning the large part played in epidemic summer diarrhea by flies. The noting of the presence

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of flies was one point called for on the card, but this item was imperfectly reported upon. Certain it is that the Twenty-ninth ward, from its proximity to the dump and the stock yards is liberally supplied with flies, and its death rate corresponds.

Not enough facts are brought out in this study to speak positively of other wards, but the fly situation is strikingly brought out by Dr. McMahon's study herewith. The figures represent the number of homes in which flies were reported. For every family in the "well" column where flies were reported, seven families were either reported as having no flies or the information was not obtained.

Number of families in which flies were reported:

	Well	Diarrhea
American	77	45
Austrian	18	18
Bohemian	89	77
German	97	78
Irish	68	29
Italian	154	118
Jewish	59	142
Negro	101	23
Lithuanian	140	66
Polish	260	477
Russian	30	11
Slovak	23	26

Thirteen per cent of the well families were reported as having flies; seventy-four per cent of the sick families were reported as having flies.

Table showing food of 2,057 infants sick with diarrhea:

Breast fed	365
Breast and other foods	410
Condensed milk	76
Commission milk	348
Cow's milk	165
Cow's milk and other foods	368
Patent foods	35
No milk	203

The study of the food tables would, on the face of it, show that milk alone was considerably safer than milk with other foods for infants; that to those sick, cow's milk was fed in slightly more cases than breast milk. These points are emphasized by taking into consideration the nationality of the mothers and the fact that the foreign women are more able or more willing to nurse their babies; that they are unable to pay for artificial food if at all able to produce breast milk. We are dealing in the main with foreign mothers, only 109 of the cases coming under the head "American."

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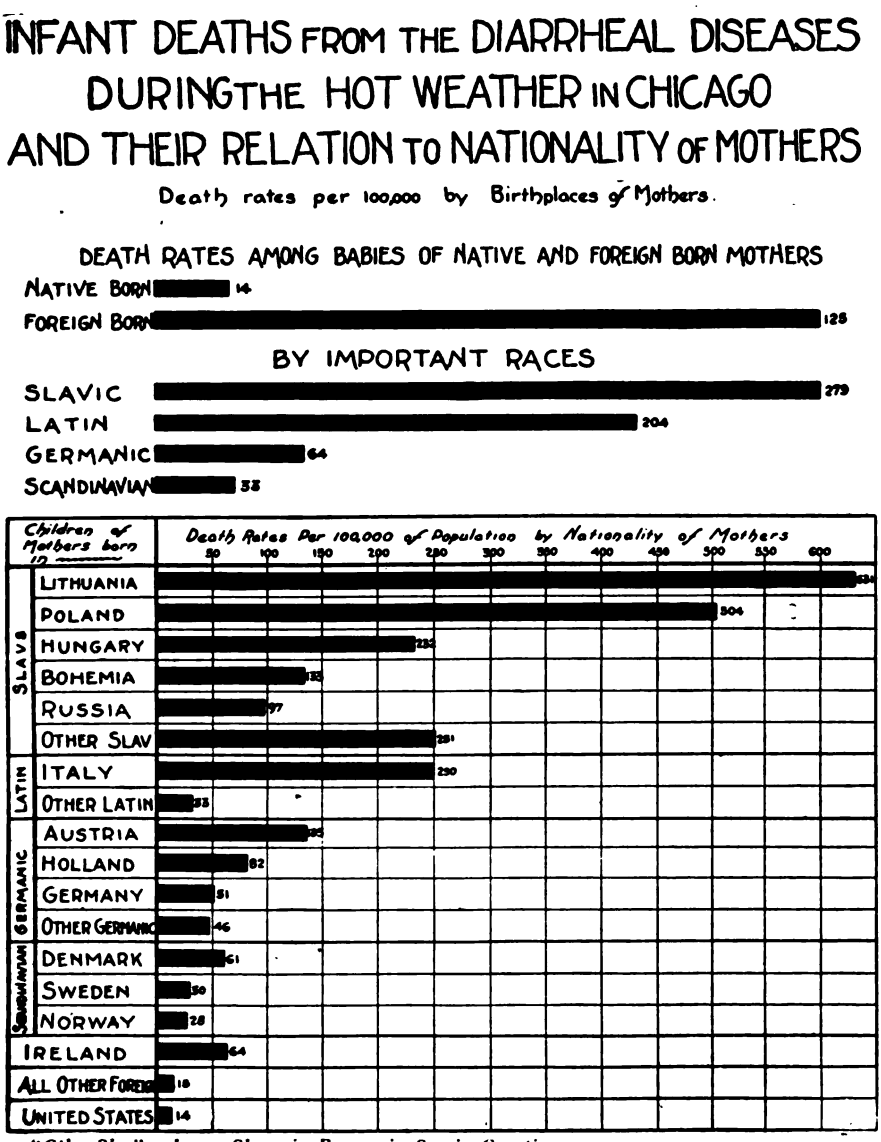
This preponderance of foreign mothers and the Slavic nature of the problem is strikingly shown by the mortality diagram prepared by Dr. Drake.



"Other Slav" embraces Slavonia, Roumania, Servia, Croatia.
"Other Latin" embraces France, Greece, Spain, Portugal.
"Other Germanic" embraces Belgium, Switzerland, Luxembourg.

Department of Health—City of Chicago.
EDUCATIONAL SERIES, NO. 21.

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The 2,057 cases of diarrheal diseases by ages are as follows:

Less than six months .....445 or 21 per cent
7 months to 1 year .....670 or 32 per cent
1 year to 2 years .....672 or 32 per cent
Over 2 years .....107 or 5 per cent
Unknown .....163 or 10 per cent

We seem to have about the average number of cases under two years of age with a tendency to have more cases under six months of age. These are additional facts that point toward bad nursing habits, addition of other food, as well as the improper keeping of milk.

The following statement gives the result of a study by Dr. McMahon of the sanitary status of 10,951 families.

	Good Sanitation	Fair Sanitation	Poor Sanitation
Sick	470 or 4%	442 or 4%	442 or 4%
Well .....2,282 or 20%		1,191 or 10%	964 or 8%

The following table, also by Dr. McMahon, is a study of 1,500 cases on the basis of age, diarrhea and feeding. The findings in the relation of milk to summer diarrhea are hardly more clear than those in the relation to sanitation, but the striking relation between flies and this sickness demand our most careful thought:

Food and Age	Good Sanitation	Fair Sanitation	Poor Sanitation	Not Given
Breast milk, under 1 year	140	55	27	101
Breast milk, over 1 year.....	19	9	16	28
Breast milk and other food—				
Under 1 year	21	55	32	83
1 to 2 years	27	47	28	109
Over 2 years.....	6	3	1	1
Unknown.....	..	5	..	2
Cow's milk, under 1 year.....	42	39	50	52
Cow's milk 1 to 2 years	13	25	12	21
Cow's milk, over 2 years	1	..	4	2
Cow's milk, over 3 years	2	3	..	..
Cow's milk and other food—				
Under 1 year	23	22	17	27
1 to 2 years	65	71	65	83
2 to 3 years	9	11	8	28
Over 3 years	2	4	9	10
Unknown.....	..	9	1	..

SUMMARY OF CHILDREN UNDER 1 YEAR OF AGE:

Food.	Good Sanitation	Fair Sanitation	Poor Sanitation	Not Given
Breast milk	40	55	27	101
Cow's milk	42	39	50	52
Breast milk and other foods.....	21	55	32	83
Cow's milk and other foods	23	22	17	27

What was accomplished: Six hundred and fourteen babies saved during the year, but very little actual diminution in numbers of diarrheal disease deaths. This does not take into account increase in population, nor does it take into account the high relative humidity and slightly increased heat of the summer of 1909. We believe we actually accomplished a saving of about ten per cent.

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Of vastly more import, we believe, than the actual number of lives saved, is the immense amount of educational work done by the nurses and doctors, for, as Newman well points out, it is, in the last analysis, the mother who must save the baby. There are signs of a real awakening of interest in the question of baby care; it has been observed that the value of barley water and of castor oil is more generally the topic of conversation at Polish gatherings.

What should be done: First, the campaign should be a year-around affair. A few weeks of instruction in the summer is not sufficient. It must be line upon line and precept upon precept, year in and year out. To do the work effectively, we must know where the babies are. Legislation must be procured that will enable the Health Department to get full and accurate birth returns promptly. At present, about one-third of the births are reported with aggravating slowness to the County Clerk. Pending the enactment of such legislation, other schemes must be devised to locate the babies. A house-to-house canvass is expensive; in 1909, 18,000 families were visited to find 2,857 sick babies. But this does not, of course, mean total loss of the other 15,000 visits, as we were waging a mother's educational campaign as well as a baby saving one. The preventive or educational campaign is the important one. The death rate on our reported cases is high, 10 per cent. The disease tends to be chronic, and to injure the organism for a long time, therefore the babies must be found soon after birth, and mothers must be given the necessary instruction before the baby takes sick.

There are three possibilities that we can see in the baby finding problem:

1. Begin a popular movement for baby citizenship. Give a card printed in colors and having a legal weight as a certificate of citizenship to every baby voluntarily reported within one month of birth. As an inducement to get the reports in, agree to affix to the card the picture of the baby. Many foreign people cannot afford pictures, and will go to considerable sacrifice to procure one. Make this card good for school entrance, acceptable as a work certificate and as indicating the right to vote. In event of return to a foreign country, it could be used as a protection against army service.

2. Institute a return postal system of reporting births to the Health Department by doctors. As the law now stands, physicians are supposed to be paid twenty-five cents for every birth reported, but as no appropriation is voted for this purpose, the law is inactive. This law should be repealed but in the meantime return postals and the co-operation of the medical societies should bring some increase in reports of births.

3. Interest and secure the co-operation of the great industrial life insurance companies. Many of these have already been approached and have signified a willingness to help.

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As a further step in the educational work, the feeding and care of infants should be systematically and persistently taught in certain grades of the public and parochial schools. As most children of foreign parentage fail to reach the high schools, this teaching should be done in the lower grades. The baby tents are a valuable addition

TABLE OF SUMMARIES—YEAR 1909.

	American	Canadian	Belgian	Hollander	Austrian	Bohemian	Croatian
Total number families visited.							
No sickness	812	10	4	23	174	513	27
Diarrhea	109	....	3	11	27	91	3
Other Diseases	37	2	....	....	13	25	1
No. wards in which well families were visited							
Per 1,000 + cases	....	....	....	....	....	....	....
Per 500-1,000 cases	....	....	....	....	....	....	....
Per 100-500 cases	4	....	....	....	1	3	....
Per 1,000 cases	17	6	3	4	8	10	5
Total number cases diarrhea by ages.							
Under 6 months	29	....	....	6	8	19	2
6 months to 1 year	24	....	2	4	11	20	1
1 year to 2 years	39	....	....	1	6	39	....
Over 2 years	12	....	....	....	2	2	....
Total number cases diarrhea by type.							
Medium	45	....	....	3	14	42	1
Severe	30	....	....	....	9	14	2
Total number cases diarrhea by onset.							
May	1	....	....	....	....	....	....
June	12	....	1	3	....	....	....
July	38	....	....	2	9	9	1
August	51	....	....	4	18	14	1
September	6	....	....	2	....	1	....
Total number cases diarrhea by duration when first seen.							
Days	40	....	1	2	11	33	1
Weeks	40	....	1	....	10	43	1
Total number cases diarrhea by termination.							
Deaths	10	....	....	....	1	2	....
Recovered	58	....	2	8	14	54	....
Total number cases diarrhea by food.							
Breast	9	....	....	....	2	16	....
Breast +	19	....	....	4	9	15	1
Condensed	11	....	....	....	1	1	1
Commission	27	....	1	6	1	7	....
Cow	6	....	1	1	6	14	....
Cow +	14	....	....	....	3	20	....
Patent food	4	....	....	....	....	....	....
No milk	19	....	....	....	5	18	....
Total number cases diarrhea.							
Water given	54	....	1	....	6	18	50
Water not given	10	....	....	....	....	2	11
Milk kept cool	25	....	1	....	8	3	13
Milk not kept cool	23	....	....	....	1	1	8
Total number deaths diarrhea.							
August	126	6	2	3	6	42	1
September	139	....	2	3	7	27	1
Population by nationalities (Note preponderance of Slavic people.)	523,256	41,021	2,822	17,406	45,247	87,089	697

to both the educational division and the baby saving side of the work; their educational side should be developed.

The Milk Commission should approach the problem on the educational side. As is pointed out by Mr. Phillips, of New York, the

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amount of milk sold for babies by a milk commission is a measure of its inefficiency. The milk should go to the mother, that she may nurse her baby and she should be taught at the milk commission station how to nurse her baby and how to make the best of herself and her baby.

TABLE OF SUMMARIES—YEAR 1909.—*Continued.*

Slovak	Hungarian	Roumanian	Russian	Pole	Lithuanian	Finn	Dane	Swede	Norwegian	English	Scotch	Irish	German	Swiss	French	Jewish	Greek	Italian	Negro	Others	Totals
250	80	1	91	5335	676	5	28	196	61	74	12	792	1927	5	57	1119	26	935	453	65	14,580
47	15	2	34	723	127	1	1	14	9	4	3	69	225	....	3	222	10	243	27	4	2,057
20	2	2	1	234	29	....	....	4	1	3	2	47	44	1	1	91	8	37	16	....	800
....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	.....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	.....
1	....	....	....	2	2	....	....	1	....	....	....	3	7	....	....	1	....	4	2	1	.....
7	10	1	11	10	7	2	7	10	7	13	6	16	15	4	10	15	9	14	9	34	.....
....	....	....	12	109	30	....	....	2	1	1	1	20	61	....	....	53	2	49	7	7	445
....	....	1	11	233	54	....	....	4	1	1	2	24	61	....	7	74	4	91	5	12	670
....	....	1	6	265	20	1	1	5	6	....	....	15	70	....	....	82	2	87	13	9	672
....	....	....	1	62	19	....	....	....	....	2	....	4	17	....	....	7	1	14	2	2	752
....	....	....	11	502	63	....	1	8	1	2	1	38	99	....	3	95	2	89	19	18	1,079
....	....	....	....	122	33	1	....	5	2	....	....	15	52	....	....	48	2	73	2	6	424
....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	....	2	1	....	....	....	7
....	....	....	20	35	12	....	....	1	1	....	1	6	25	....	2	21	1	33	10	4	196
....	....	1	6	208	46	....	....	3	2	1	2	18	50	....	1	107	2	65	14	8	522
....	....	1	7	358	19	....	1	10	....	3	32	10	2	....	....	83	5	127	3	17	879
....	....	....	1	31	....	....	....	....	....	....	5	2	7	....	....	4	....	16	....	....	94
....	....	2	5	164	32	....	1	4	....	4	2	1	33	....	78	79	....	77	14	7	602
....	....	....	8	313	66	....	....	6	....	5	1	2	15	53	112	4	66	10	....	13	751
....	....	1	2	33	17	....	....	....	....	2	1	5	8	....	15	....	14	....	....	4	122
....	....	1	18	394	55	1	....	8	1	2	1	29	126	....	124	7	144	9	1	17	1,131
....	....	....	3	152	13	....	....	2	2	2	....	16	36	....	53	....	34	7	....	5	365
....	....	2	2	171	25	....	....	4	....	1	....	12	33	....	44	5	38	6	....	8	410
....	....	....	....	22	9	....	....	....	1	....	....	7	12	....	....	....	9	1	....	....	.....
....	....	....	20	50	23	....	....	2	2	1	2	15	59	....	59	1	52	1	....	4	348
....	....	....	1	41	17	....	....	5	....	....	....	5	18	....	18	....	22	3	....	1	165
....	....	....	4	154	22	1	1	1	1	....	1	5	38	....	24	4	47	9	....	4	368
....	....	....	....	18	5	....	....	....	....	....	....	4	2	....	....	....	....	....	....	....	203
....	....	....	1	61	10	....	....	....	....	....	....	7	21	....	20	....	30	....	....	....	.....
2	...	....	1	12	335	61	....	....	7	3	3	3	4	5	148	8	81	15	....	19	1048
....	....	....	....	6	79	26	....	....	....	....	....	....	....	5	36	....	26	1	....	3	243
1	....	....	1	21	74	7	....	1	7	2	1	3	....	13	90	3	65	12	....	4	437
....	....	....	....	6	213	41	....	....	1	2	....	....	....	15	13	...	29	5	....	4	401
....	....	3	43	210	10	1	2	13	5	3	....	39	56	....	4	2	5	....	....	51	709
....	....	....	44	166	6	....	4	4	3	4	....	25	21	....	....	1	31	....	....	42	547
.....	15,498	3,258	93,116	129,783	7,953	1,035	18,849	107,290	43,816	53,037	20,863	179,845	421,615	5,386	7,406	.....	4,218	52,052	33,729	5,788	

The further co-operation of the clergy should be secured; co-operation of the foreign speaking priests would be especially helpful. We believe that each nationality must help itself, and as the Poles are largely church people, much is hoped for through the church.

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The need for a body of socially trained nurses is apparent. The handling of cards and the placing of cases is no part of the regular training of a nurse. The school of Civics and Philanthropy has been approached, and a post-graduate course along these lines for nurses is one of the possibilities of the future. Endowment of a fellowship for the bacteriologic study of the disease should be encouraged. This would include not only the determining of the actual number of cases in which the Shiga bacillus is present, but also methods of infection, the relation of flies, contaminated milk and food, and of the contagion from other sources, also the study of other organisms involved.

HEALTHGRAMS.

From *The Bulletin.*

It is a careless community that neglects the health problems of its educational system.

* * *

"Where the sun does not go the doctor does," is an Italian proverb well worth remembering.

* * *

Give the pores of your body their right to breathe and they will help you "hold" your breath.

* * *

What some economical (?) people keep from the doctor they give to the undertaker—and then some.

* * *

As you go through life always take the sunny side of the street. Shade and shadow are not good for your health.

* * *

Life is short—far too short for many of us—much shorter than it need be for all of us. Saner living for the longer life.

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REPORT OF

DIVISION OF HOSPITAL CONTROL

DR. C. ST. CLAIR DRAKE
In Charge

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HOSPITAL AND DISPENSARY CONTROL.

All hospitals and free dispensaries in the City of Chicago, excepting those maintained by the Federal, State, County and City governments are subject to license control.

Under the revised ordinance, passed June 1, 1908, material advancement has been effected in the matter of hospital regulation.

The salient features of the present ordinance relating to hospitals may be briefly enumerated.

Definition of Hospital: Any institution or place used for the reception or care, temporary or continuous, of two or more sick, injured or dependent persons; or used for the treatment of two or more persons suffering from or afflicted with any mental or physical disease or bodily injury; including all hydropathic and massage institutions. A *maternity hospital* is defined to mean any institution or place used for the reception and care, temporary or continuous, of *one* or more women during pregnancy while awaiting confinement, during confinement, or for one month or less after confinement while recovering therefrom.

License: It is unlawful for any person, firm, association or corporation, other than regularly constituted authorities of the United States, the State of Illinois, the County of Cook or the City of Chicago, to open, conduct, manage or maintain any hospital within the corporate limits of Chicago, without first obtaining a license therefor.

Application: Any person, firm, association or corporation desiring such license shall apply in writing to the Commissioner of Health stating location; purpose for which hospital is to be opened, conducted or maintained; accommodations for inmates; nature and kind of treatment to be given; name and address of the chief physician, surgeon or attending chief physician or surgeon, or board of physicians or surgeons attendant therein.

The Commissioner of Health then makes strict inquiry into facts set forth in application and if satisfactory in every respect he recommends that a license be issued.

License Fee: The license fee is one hundred dollars, payable annually to the City Collector on the first day of January, in advance. When license is issued for less than one year, the fee shall be for the unexpired license period, and a proportionate part of the annual fee, but no fee shall be less than twenty-five dollars.

Provided, that if an affidavit is made by applicant for hospital license that said hospital during previous calendar year gave to its patients not less than ten per cent of its general average capacity of bed days free of charge of any sort, then an inquiry shall be made by the Commissioner of Health into said statements and upon his recommendation the license fee may be remitted.

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Hospital Building Board: For the purposes of this ordinance a Hospital Building Board is created, consisting of the Commissioner of Health, the Commissioner of Buildings and the Chief Fire Marshal. They meet upon call of the Commissioner of Health and make such recommendations to the City Council as they may deem necessary or expedient for the construction and erection of new hospital buildings, and for changes in buildings now being used or which may hereafter be used for hospital purposes.

Accommodations for Patients: In every hospital each room occupied by a patient or patients shall be of such dimensions as to give not less than 800 cubic feet of space for each patient; each room shall have at least one window connecting with external air for each two beds; said windows shall be such as shall secure to each patient at least 2,400 cubic feet of fresh air per hour by natural ventilation, otherwise each room shall additionally be fitted with such ventilation appliances as will secure this amount of air change. Each bed shall have at least eighty square feet of floor space. Each ward or wing must have running water and all plumbing and sanitary appliances must be of approved construction. Cellar floor shall be of cement—watertight. Halls of each floor shall be open to external air, without obstructions at end unless sufficient light and ventilation is otherwise provided for. Adequate and proper fire escapes—stairways or inclines or exits—shall be provided.

Each hospital shall have suitable room or rooms, approved by Commissioner of Health, to be used for isolation of communicable diseases that may be found in hospital until such time as such cases shall be removed. A suitable room shall also be provided for proper care of the dead pending their removal.

In case of a maternity hospital, a regularly licensed physician must reside on the premises.

Frontage Consents: It is unlawful to build, construct, maintain, conduct or manage a hospital in any block in which two-thirds of the buildings fronting on both sides of the street or streets on which the proposed hospital may front are devoted to exclusive residence purposes, unless the owners of a majority of the frontage in such block, and the owners of a majority of the frontage on the opposite side or sides of the street or streets on which said building faces consent in writing. Such written consents shall be filed with the Commissioner of Health before permit shall be granted. (This section is as revised January, 1911).

Location of Hospitals Near Schools: No hospital of any kind shall hereafter be erected or established within four hundred feet of any property used for public or parochial school purposes.

Body of Patient Dying in Hospital Not to Be Removed: The body of patient or person dying in a hospital shall not be removed from such ospital within twenty-four hours after death unless removal is uthorized in writing by some member of the immediate family of the eased person or by some other person legally authorized to order

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or permit such removal. Provided, that no dead body shall be kept at any hospital longer than thirty-six hours after death without permission from the Commissioner of Health.

Complete Records to be Kept: Every hospital must keep a complete record of all patients admitted to the institution, including name, age, social status of each and the disease or injury for which such patient is treated, together with any complications which may arise from or during such treatment, the date of admission and discharge.

In maternity hospitals the records shall also show date of birth, sex, and disposition of child, if any.

These records shall be open at all times to the inspection of the Commissioner of Health or his duly authorized representatives.

Daily, Weekly and Monthly Reports: Every hospital shall make the following reports to the Commissioner of Health:

Actively contagious diseases—such as smallpox, chickenpox, diphtheria, scarlet fever, mumps, measles, German measles, impetigo contagiosa, etc., —shall be reported *daily by telephone.*

Such diseases as typhoid fever, tuberculosis, epidemic cerebro-spinal fever, pneumonia and such other diseases as may be designated by the Commissioner of Health, shall be reported *weekly* on forms furnished by Department of Health.

A complete record, giving names, addresses and causes of death, of all persons dying in hospitals during the calendar month shall be made on or before the fifth day of the succeeding month, on forms furnished by the Department of Health.

In case of a maternity hospital such report shall set forth the names or registered numbers of patients received and discharged, the disposition of infants, the results of treatment and such other information as the Commissioner of Health may require.

All reports are required to be verified by affidavit or affirmation of chief physician, superintendent or officer in charge of such hospital.

Inspection—Revocation of License: Every hospital shall be open at all times to inspection of Commissioner of Health or his duly appointed assistants or inspectors.

If, upon inspection, it shall be found that an institution is being conducted or maintained in violation of the ordinances or rules and regulations of the city, the Commissioner of Health shall recommend to the Mayor the revocation of the license of such institution.

Illegal Confinements—Registration by Patients in Maternity Hospitals: It shall be unlawful for any physician, midwife or nurse to take a woman into his or her home for confinement or to confine her there or to place her for confinement in any place except a licensed maternity hospital, without securing permission from the Commissioner of Health.

Any patient may, either before or after entering a maternity hospital, file her name and address, that of the father of the prospective child, the names of the party or parties adopting the infant, or any part of such information, with the Department of Health and a card bearing a registered

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number and stamped "Maternity Record, City of Chicago," shall be given to such patient, which number shall thereafter serve to designate the case; and further inquiry into the sociologic facts of the case by the owner or owners of such hospital or any one connected therewith shall be illegal.

Any information filed by any patient in accordance with the foregoing provision shall be registered and kept in a secret record to which no person except officials of the Department of Health shall have access, unless by the certified order of a Court of competent jurisdiction.

Penalty: Any person, firm, association or corporation opening, conducting or maintaining a hospital without first obtaining a license therefor, or after revocation of such license, shall be fined not less than one hundred dollars nor more than two hundred dollars for each offense; and each and every day on which any person, firm, association or corporation shall be guilty of such violation, failure or refusal to comply with any of the provisions of this article shall be deemed a separate and distinct offense.

Provided that in the event of a conviction of any such person, firm, etc., for a violation of any of the provisions of this article relating to the safety and accommodation of patients, it shall be the duty of the Commissioner of Health and he is hereby authorized and empowered to close such hospital and to cause its vacation pending the repairs, alterations or additions necessary to make it safe and proper for the occupancy of its inmates and to make it comply with the terms of the ordinance.

Zone of Quiet Around Hospitals.

By ordinance passed November 4, 1907, a zone of quiet was created and established in all territory embraced within a distance of two hundred and fifty feet of every hospital in the City of Chicago.

It is the duty of the Commissioner of Public Works to place or cause to be placed, on lamp posts or some other conspicuous place, on every street or streets on which any hospital may be situated, and at a distance of not less than two hundred and fifty feet in either direction from such hospital, a sign displaying the words "NOTICE—ZONE OF QUIET."

Making, causing or permitting to be made of any unnecessary noise or the playing of itinerant musicians upon public streets, avenues or alleys within any such zone of quiet is declared a nuisance.

The penalty for violation of any of the provisions of this ordinance is a fine of not less than two nor more than fifty dollars for each offense.

Regulating Free Dispensaries.

Definition of Dispensary: A dispensary is a place or an establishment where medical and surgical advice and treatment are given free to indigent persons, and where drugs are dispensed, the cost for which, if any, shall not exceed fifteen cents for each prescription.

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No place or establishment shall be advertised, conducted or managed under the name "dispensary" unless such place or establishment is a dispensary under the above definition.

License Required: No dispensary, other than those operated or maintained by the regular constituted authorities of the United States, State of Illinois, County of Cook or City of Chicago, shall be opened, conducted, or maintained within the corporate limits without first obtaining a license therefor.

Application: Shall be made in writing to the Commissioner of Health stating location of proposed dispensary, the purpose for which to be opened, accommodations for patients, nature and kind of treatment to be given and the names and addresses of the physician or physicians attendant therein.

License Fee: The annual license fee is twenty dollars; when issued for a period of less than one year, at a proportionate rate; but no fee shall be less than five dollars.

Provided, if the applicant for such license shall file with his application a bond in the sum of fifty dollars, with approved sureties, conditioned that the applicant will fill *free* of charge all prescriptions presented to him during term of such license, said license may be issued without payment of said fee.

It is the duty of the Commissioner of Health to make strict inquiry into the facts set forth in application and if all such prove satisfactory and if the attending physicians in such dispensaries give or are under agreement to give such attendance therein as does or will render them responsible, professionally, for the medical or surgical treatment given or to be given to any and all indigent persons applying thereto, he shall recommend to the Mayor the issuance of a dispensary license.

Records: Every dispensary shall keep complete records of all patients and these shall be open to inspection of the Commissioner of Health or his duly authorized representatives at all times.

Reports: All cases of smallpox, scarlet fever, diphtheria, measles, whooping cough, rabies, cerebro-spinal meningitis, gonorrheal ophthalmia and other markedly contagious or communicable diseases must be reported at once by telephone to the Department of Health as soon as such diseases shall be treated or shall be known or reported to a dispensary.

Weekly reports shall be made to the Department of Health of all cases of consumption, typhoid fever, syphilis and gonorrhea with the names and addresses of patients.

A monthly report shall be forwarded to the Commissioner of Health on or before the fifth day of each calendar month showing a complete record of numbers of patients and treatments during the preceding month classified according to the disease.

These reports shall be verified by affidavit or affirmation of the chief physician or superintendent of such dispensary.

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Inspection—Revocation of License: Every dispensary shall be open at all times to inspection of the Commissioner of Health, his representatives or inspectors.

Whenever it shall be found that a dispensary is being conducted in violation of the ordinances, rules or regulations of the city, the Commissioner shall recommend to the Mayor the revocation of its license.

Penalty: For violation of this ordinance a fine of not less than twenty-five dollars nor more than one hundred dollars shall be imposed for each offense; each and every day of such violation, failure or refusal to comply with the ordinance provisions constituting a separate and distinct offense.

HEALTHGRAMS.

From *The Bulletin.*

The greatest wealth is health.

* * *

Good health is priceless; yet it is without price.

* * *

It is easier to retain than to regain health.

* * *

The proper appreciation of health will delay its depreciation.

* * *

When you give health for money you exchange wealth for trash.

* * *

If your health is good it is easy to forget how old you are.

* * *

Good food, good drink and good air for good thinking and good working.

* * *

In the conservation of health an ounce of intelligence is worth a ton of ignorance.

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REPORT OF
BUREAU OF SANITATION

CHARLES B. BALL, C. E.
Chief of Bureau

THOMAS J. CLAFFY
Asst. Chief of Bureau

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BUREAU OF SANITATION.

INVESTIGATIONS OF CITIZENS' COMPLAINTS.

Volume of Complaints: The inspection of insanitary conditions and nuisances, of which complaint is made by citizens or which are transmitted indirectly to the bureau through other departments of the city service, has greatly increased in volume in the past four years, as shown by the following table:

	Years			
	1907.	1908.	1909.	1910.
Complaints.	10,564	14,600	14,770	15,100

The distribution of complaints for the year 1910 is presented in the following table, which shows that there is a seasonal distribution, as would naturally be expected, the number of complaints being much greater in the summer months:

January	870	May	1,415	September	1,412
February	736	June	1,728	October	1,331
March	1,200	July	1,754	November	782
April	1,124	August	2,033	December	715

It is not possible with our present force to see that all notices issued during the summer months are complied with, as the volume of issuances is so great that re-inspections cannot be made at the expiration of the limit period. This work is pushed, however, as soon as the complaints begin to decline.

With respect to the number of complaints, it is interesting to note that they increase with an efficient service. If the people who are inclined to complain have faith in the operations of the Department to afford remedy to objectionable conditions, they are stimulated to make complaint and the volume correspondingly increases. If they have little faith in the Department, either as to its efficiency or honesty, they will feel it is useless to file complaints.

On the other hand, among conditions complained of there are occasional cases of very long standing, such as obscure leaks in water service pipes and drains, or improperly lighted and illy ventilated rooms, where, if the remedy is once applied, the cause of complaint is completely eliminated, so that there is a slight decrease in volume by reason of cases that are permanently remedied.

Office Review of Inspectors' Records: The most important advance over the practice prevailing in 1907 has been the institution of a review service by an inspector having considerable experience with field work, who is charged with the duty of carefully reviewing each report. This reviewing clerk devotes his attention chiefly to two

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points: (1) The completeness of the report as to conditions found; (2) the form of order which the inspector proposes to send out.

The instructions given to the inspector in this regard must necessarily be broad rather than detailed, the basis of his work being that the record shall show sufficient facts on which to intelligently discuss the case, either with the complainant in cases where a notice is not issued, or with the owner or agent upon whom the notice is served. The phraseology of the order may, it is hoped, be ultimately prearranged in accordance with a set of forms of orders, some one of which will apply to practically every case, so as to avoid the necessity that the inspector should formulate his own expression of the requirements made.

The Method of Handling Complaint Records: The steps in the handling of complaints respecting insanitary conditions and nuisances are as follows:

1. The complaint received, either verbally or in writing, is recorded on a complaint card 4x6 inches in size. This card has the address on the first line, followed by the subject matter of the complaint and proper spaces for the dates on which it is assigned to the inspector and returned by him, as well as opportunity for the proper notation of the action taken. The identity of the complainant is shown by writing his name on the back of the card, but is not revealed to field inspectors, or other office employes, or to the person upon whom the notice is served, except by special authorization of the Commissioner.

2. The complaints, having been assigned a serial number and arranged in groups by district and inspector, are typewritten on an assignment sheet for the current day, a duplicate of a different color being made for the reviewing clerk. This assignment sheet is given to the inspector at the close of a day or on the following morning.

3. The inspector makes his investigation and notes on the assignment sheet the date on which each report is made, holding the sheet until all investigations called for have been made, then turning in the assignment sheet for comparison with the duplicate held in the office.

4. The inspector prepares a report of the conditions found on a 5x8-inch card, which is blank except that opportunity is offered for a statement of the material of the building, the number of stories and occupation, and proper spaces indicating the number of the complaint and the name and address of the owner or agent. The subject matter of the report describes the conditions found and recommends the form of notice which the inspector advises be sent, or that no notice be issued.

5. The report is examined by the reviewing clerk as to its completeness of statement, whether or not a violation of law exists, and if so, the character of the notice to be served and time limit

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thereon. If no violation exists, the card is stamped with the date of receipt, and entry made on the complaint card that no cause was found or that the cause of complaint was removed, and the complaint record is closed.

6. If cause is found and a notice is to be issued, it is typewritten by the notice-writer and a duplicate made which is provided with a form for the recording of reinspections and is returned to the district inspector for the purpose of such record.

7. Reinspection is made at the expiration of the time limit of the notice to determine whether the requirements have been complied with.

8. The entry of conditions on reinspection is noted by the inspector and if the notice has been complied with, an abatement entry is made and the case is closed after the record has been completed by the office clerks. If any or all of the items of the notice are not complied with, the inspector holds the case for further reinspection, or,

9. Makes a recommendation that the attention of the owner be called to his delinquency by a form letter, which recommendation is reviewed by the supervising inspector and viséd or disapproved.

10. If, at the expiration of the time mentioned in the letter, reinspection shows that the work has not been done, the case is forwarded to the prosecuting attorney for the institution of court proceedings.

Inspection of Shops in Which Wearing Apparel is Made.

The term "workshop" is defined by ordinance as follows: "any place where goods or products are manufactured or repaired, cleaned or assorted, in whole or in part, for sale or for wages, shall be taken to be and held to be a workshop, and whenever any house, room or place is used for the purpose of carrying on any process of making, altering, repairing or finishing, for sale or for wages, any coats, vests, trousers, knee pants, underwear, overalls, cloaks, shirts, women's waists, purses, feathers, artificial flowers or cigars, or any article of wearing apparel of any kind whatsoever, intended for sale, it shall be deemed a workshop for the purpose of this article."

A city license is required for any workshop in which there are one or more employes. The number of workshops inspected and licensed in the past five years is set forth in the tabular statement herewith:

	1906	1907	1908	1909	1910 10 mos.
Workshops licensed	1279	3187	3296	3389	3652
Workshops inspected	3613	.....	7183	7758	7512

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This important part of the work of the bureau of sanitation has been conducted for the years 1907 to 1910 with a very limited force. Workshop inspection is seasonal in its character, as it is desirable to secure the largest number of inspections and licenses possible with the beginning of the license year, May 1, and it is impossible to complete the necessary canvass before the complaint work of the summer is at its maximum. In 1910, an average of five inspectors was employed upon this work from May 1 to October 1. In 1909, nine inspectors worked about four months. With this limited force it is not possible to give the attention which the ordinance contemplates to the 7,500 workshops in the city. Many of these do not remain even a year in one location; they are very frequently discontinued during the dull season, and under the pressure of the working seasons new ones are constantly springing up. Very few of the entire number receive a second inspection during the course of the year. Notwithstanding the various drawbacks experienced by the bureau in the control of workshops, it is believed that their sanitary status is in the main superior to that of any other large city.

Inspectors' Districts and Canvass: It has not been deemed practicable to adopt any other method of locating these establishments than by an annual canvass of the entire area of the city. For that purpose the city is divided into a number of districts of considerable extent, the boundaries of which are determined by considerations of transportation, density of population and number of workshops. Inspectors are required in canvassing such a district to inspect block by block, beginning at the northeast corner and going around the entire block to the point of beginning.

Workshop Records: The workshop record card is a 5x8-inch heavy paper form having appropriate spaces for location, proprietor's name, class of work, description of the space occupied, giving its measurement in detail and cubic contents, the number of males and females employed, as well as a detailed statement of the lighting, ventilation and cleanliness. This record shows the maximum number of persons who may be allowed to occupy the spaces under the ordinance requirement of 500 cubic feet of air space for each employe, assuming, if ordinary conditions of ventilation prevail by the use of windows, that four complete changes of air would be made per hour. The inspector's report is verified as to its computations by a reviewing clerk and is then placed in the license files, or, if there are no employes, the record is closed.

Licensing of Workshops: If the establishment is subject to license, a postal card is mailed to the proprietor, asking that he make the necessary application and take out a license. On his personal request for a license a recommendation is made to the city clerk stating that the premises have been examined and found subject to license.

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Remedying of Insanitary Conditions: If a workshop is found to be overcrowded or in dirty condition, or without adequate toilet facilities, a report of these facts is made by the inspector; this record is reviewed by a reviewing clerk and a notice is issued as in the case of complaint orders.

General Considerations: The difficult problem of regulating the whole manufacture of wearing apparel is as yet unsolved. It would work a hardship to restrict the practice of taking work home in the case of those who are dependent upon this home work as a means of livelihood. It has not yet been deemed practicable to enact laws which would prescribe that such work should only be taken to homes in which the conditions were approved. Even if the tenement rooms in which the work was done were at one time found clean and therefore approved, the next day might find them unsuitable places for the manufacture of clothing. It is still an open question whether it would be possible to enact an ordinance requiring manufacturers to give notice of the homes to which they have allowed work to be taken, so that an inspection may be made of the premises.

It should be noted that this service is partly self-sustaining, as the revenue for licenses in 1910 exceeds $7,300.

Inspection of Bakeries.

Previous to the passage of the ordinance for the control of bakeries, November 11, 1907, the recommendation of the Bureau that certain bakeries be licensed was perfunctory in most cases and did not depend upon a detailed inspection of the conditions which existed. Active operations under the new ordinance began January 17, 1908, a thorough canvass being made as rapidly as possible of the existing bakeries, about 1,300 in number. A careful tabulation of the conditions noted in the first 1,000 bakeries examined was made, which statistical data will be of value, not alone for determining the changes required under the ordinance, but as affording a means of comparison at some future time with the conditions at the time when the ordinance was passed.

The following tabulation shows the number of cellar bakeries and their decrease, the number of daylight bakeries and their increase, the number of plans approved for the construction of new bakeries and the locations in existing buildings in which it was proposed to locate bakeries:

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	1907	1908	1909	1910	Total	Increase	Decrease
Cellar Bakeries.....	581	485	333	294	.....	.....	287
Daylight Bakeries.....	744	855	1022	1093	.....	349	.....
Building Plans for New Bakeries Approved...	.....	65	78	60	203	.....	.....
Proposed locations examined	.....	186	228	182	596	.....	.....
Existing Cellar Bakeries Approved.....	.....	.....	.....	.....	190	.....	.....
Existing Cellar Bakeries Disapproved.....	.....	.....	.....	.....	104	.....	.....

The principal questions, as to suitability of location for the purpose of a bakery and as to the operation and maintenance, have arisen with respect to the existing underground establishments, many of which were of low ceiling height, without adequate ventilation, or if ventilation was at all possible it could only be obtained subject to the entrance of street and alley dirt, and many such premises being subject to flooding during severe storms from the backing up of sewage. As soon as the detailed record elsewhere described was perfected, consideration was given to the possibility of remedying the bad structural conditions by the cutting of additional windows or rearrangement of working space. It was found that 12 of the 1,300 bakeries could be classed as suitable without any structural change, that 19 could be approved with slight changes and that about 190 cellar bakeries could meet the requirements of the ordinance by material changes in structure. About 380, in the opinion of the Department, it was impossible to remedy.

Upon the issuance of notices to discontinue operation in a given place or to make important structural changes the authority of the Department and the validity of the law were often questioned. They were not, however, the subject of any legal proceedings until more than 200 cellar bakeries located in various parts of the city had been discontinued and nearly 100 had signified their intention to comply with the structural changes required. On account of the large expense involved and the serious objection of the owners of certain restaurant bakeries in the business part of the city, a group of bakery and restaurant operators began legal proceedings to enjoin the city against the enforcement of the ordinance and the ordinance was declared void November 6, 1909. In his decision, Judge Windes did not hold that any of the sanitary provisions were illegal, but based his conclusion only upon three administrative provisions in the law.

Operations Under the New Ordinance: The new ordinance was framed at the request of the Department and embodied all the substantial provisions of the previous ordinance with the exception of requiring the lighting by natural light of the bakeries then existing. In expression it is more detailed than the ordinance which it supersedes. Protracted sessions of the license committee of the city council

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were held, discussing with great minuteness the various provisions, which as framed were in the main quite satisfactory to the Department. This ordinance, as the ordinance of 1907, was passed without a dissenting vote either in the committee or the council and became effective February 28, 1910.

Work under it has been continued during 1910 and a substantial gain has been made in the situation, both with respect to discontinuances of existing underground bakeries in bad locations and the construction and supervision of new bakeries. The present practice of requiring building plans for new bakeries to be approved in this bureau before the issuance of the building permit is a noteworthy one and has been applied to more than 200 such buildings.

In addition to the construction of new buildings, careful consideration has been given to locations in existing buildings in which it was proposed to establish a bakery. The consent of the Department has been given in some cases to locations which were far from ideal because the owner or tenant insisted that some plan should be worked out by which the baker should remain a tenant of premises which he had occupied for a long time.

Methods of Inspection and Record: The force employed consists of five inspectors, working under a supervisor who personally makes the inspections of the many bakeries connected with restaurants in the congested downtown district. Each of the five inspectors is assigned a definite portion of the remaining area of the city.

A list of bakeries alphabetically arranged by streets is kept in a book for each district and constitutes a continuous record of inspections made of each bakery throughout the year so that it can be determined at a glance when a bakery was last inspected, how many times inspected during the year and on what dates a complete record was made of the conditions.

Bakery Schedule: The five inch by eight inch bakery schedule card covers in great detail the characteristics of the location with regard to light and ventilation, condition and structure of floors, walls, ceiling, fixtures, utensils and plumbing, as well as a record of the presence of rats or vermin. At least once a year a complete record is made of each bakery, and if violations of the ordinance are found appropriate orders are issued. A notice to remedy violations is sent by mail to the baker and is duplicated on a copy retained by the inspector on which he reports reinspections until the orders are complied with.

A sketch of the floor plan of the bakery is made upon the ruled side of the bakery card. This plan shows the location and surroundings of the building, the doors, windows, skylights and size of the spaces upon which these openings abut, the interior arrangement of partitions, ovens and fixtures, and the location of the water closet and sink. The fullness of the record is entirely justified in view of

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the frequent discussions of conditions in a particular bakery, and is far superior to any form of book record.

Approval of Plans for New Bakeries: When building permits are requested for bakeries in new buildings, the plans are submitted to the supervising inspector, who determines the suitability of the proposed room for bakery purposes and suggests changes if the plan is unsatisfactory, in some cases inspecting the proposed site.

Proposed Bakeries in Existing Buildings: Since January 1, 1908, 596 locations in which it was proposed to establish new bakeries in existing buildings have been examined. These examinations are made by the inspector in the district, who reports upon a card endorsed "Proposed Bakery" and gives the length and width of the room, its height of ceiling, means of lighting and ventilation, the adequacy or inadequacy of these, the location of the water closet and sink, and the condition and structure of the floors, walls and ceilings. A plan is sketched upon the card showing the partitions, lot lines, and also the spaces upon which the windows and doors open.

The proposed locations are classified in three divisions: (1) Locations approved without changes; (2) locations subject to approval after prescribed changes have been made; (3) locations in which it is clear that the provisions of the bakery ordinance cannot be complied with by reasonable changes and which are, therefore, disapproved for bakery purposes.

Results: A great advance in the character of the locations occupied for bakery purposes and in the maintenance of bakeries has resulted from this study of the situation and the efforts made to improve conditions. Many of the cellar bakeries still existing are under agreement with the Department to discontinue operation at a date fixed in the future. Those in which no change of location has been made are far lighter and cleaner than when the movement for improved conditions was begun, and there is a wholesome rivalry among bakers at the present time with respect to maintenance and improvement of surroundings.

The main results, of course, have been improved conditions for the workers, although there is no doubt that an increased purity of food has been secured.

Restaurant Control.

The restaurant licensing ordinance passed by the city council July 2, 1906, was enforced by the food bureau until June, 1907. The attention of the inspection service during this period was largely devoted to the character of the food produced and resulted in the condemnation of much bad food, especially such as was improperly carried in storage at the week end.

Since the service was turned over to the sanitary bureau much less need has existed for special attention to the food conditions,

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as they were found to be greatly improved during the year which had elapsed after the passage of the ordinance by reason of the activities already described. It was, however, found that the fundamental structural conditions of many of the establishments in which restaurants were operated were such as to seriously threaten the purity of the food and the health of the workers. For this reason careful study has been made in most cases of the location, the drainage, the facilities afforded for light and ventilation, the condition of the wall and floor surfaces and the general care of utensils and fixtures, in addition to which as frequent inspections as possible have been made of the character of food furnished.

There are somewhat more than 2,000 restaurant establishments. A card record is made giving in detail the structural conditions, which record has thus far been repeated annually.

During the past two years, after the making of this annual record for each establishment, route card control of the inspectors' work has been in operation. The restaurants are listed on route lists covering about twenty establishments located on convenient routes, either along a single street or in territory adjacent to a car line, and the inspector has been required to cover these routes in succession. This plan insures a thorough systematic inspection covering the entire number of establishments.

The saloons in which restaurants are operated, sometimes constituting the major portion of the business done, have been, under a decision of the corporation counsel, exempted from restaurant licenses unless more than one meal per day is served. Some attention has been given to a classification of these various types of establishments, and it is believed that ultimately the ordinance will be so changed as to arrange for a graded license, depending upon the number of seats in the establishment, and probably irrespective of the number of meals served per day. The ordinance has no definition of what constitutes a restaurant, so that considerable difficulty is experienced in applying its provisions in certain types of eating places which may or may not be considered restaurants subject to the ordinance provisions.

During two years past the Department has given serious consideration to the disadvantages of restaurants located underground and has refused in a number of instances to approve such locations, advising the proprietors as well as the owners of the building that it would not issue restaurant licenses for a restaurant established in a specified location.

It is believed that this somewhat arbitrary course is necessary in order to make suitable advances toward the discontinuance of many existing establishments in which the cellar conditions are deplorable, both from the point of view of the patrons and the workers. There are many cellars in which daylight is entirely absent and in

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which ventilation is extremely deficient. While certain of these are capable of some improvement, the large majority of them cannot be made fit places for food preparation or for the employment of the cooks and scullions by reason of their cramped situation and low height of ceiling, so that the Department considers it necessary that they be discontinued as soon as this may reasonably be accomplished.

The improved control of restaurants may be justly considered as an expression of the advance of public opinion with respect to the general purity of food products, exemplified in pure food laws, milk supply control, and the emphasis now placed upon ventilation of establishments in which persons are employed.

Control of Slaughtering, Meat Packing and Rendering Establishments; Tanneries, Soap and Glue Manufactories; and Scavenger Service.

The jurisdiction and control of the slaughtering and meat packing industry for interstate commerce is with the United States Government; that for the Chicago market is with the Department of Health. The inspection of slaughtering and meat packing, in so far as they affect food products, is under the control of the food bureau. The supervision and control of rendering plants, glue factories, soap making and tanning establishments and the approval of applications for licenses for such industries is with the sanitary bureau.

Offal and private scavengers, whose business depends upon the disposal of offal and meat scraps at such utilization plants, are also licensed and controlled by this bureau.

The control of nuisances from these various industries depends upon frequent and efficient inspection and enforced compliance with the various requirements of the ordinances. The rendering of fresh lard, tallow or meat scraps may not be a nuisance, but the same process applied to dead animals, offal, or putrid lard, etc., is assuredly a source of grave nuisance unless properly controlled.

The ordinance requires that all tanks for the rendering of such materials shall be sealed during the process of rendering, and that the vent or blow-off shall be connected to a condenser having a continuous stream of flowing water, with connections to a suitable furnace where gases may be consumed at a temperature of at least 600 degrees Fahrenheit. Dryers in which the tankage or sludge is dried must be connected in like manner to prevent the escape of noxious odors or gases.

Night inspections as well as those by day are made at unexpected intervals for this control, the inspector going on duty at 5 p. m. and remaining until 1 or 2 a. m., reporting at the office next day at 4 p. m. Notices of violations are served in writing and suit is entered for non-compliance.

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An inspector with practical experience as a tanner is assigned to tannery inspection. As this requires but a small part of his time, he is assigned to regular sanitary inspection work as well. It has been the custom to assign two detectives to the control of the offal and private scavengers who haul garbage from hotels, restaurants and large apartment houses, also those who haul manure to city dumps or loading stations. The detectives' duties are to report on the types and conditions of wagons, boxes and receptacles used for the hauling of such materials, to check licenses and to locate and control manure loading stations. The location and maintenance of the latter are also under the supervision of the Department of Health.

Privy Vaults and Night Soil Control.

The number of privy vaults in the city is estimated at 14,047, of which 5,788 are located on premises not provided with public sewer facilities. An annual increment of unknown amount is added by the building of houses in outlying districts where no sewers exist, but this increment is certainly less than the number of vaults replaced by water closets. The cost of cleaning privy vaults and of the supervision of such cleaning is highly increased as the distances of their locations from the populous centers of the city increases.

The methods of doing this work have been much improved under the ordinance passed November 11, 1907, requiring its performance in daylight hours instead of at night. The use of an excavating pump with tight hose discharging into an iron tank-wagon for all cases where the material is soft enough to permit this means of handling has been prescribed. If the vault contents are solid, as is often the case, the cleaning is performed by shoveling into barrels, which can be promptly sealed before loading. The tank wagon is usually emptied into a sewer manhole chosen for that purpose on a public sewer, the contents being mixed with a considerable amount of water that it may float away readily and avoid obstructing the sewer. Due care is observed to intercept, by a proper strainer, sticks, cans, etc., which would be objectionable if allowed to enter the sewer system. Some offensive material is dumped into open fields and is required to be promptly plowed under.

The work of cleaning and disposal is done by licensed scavengers under permits for each vault and subject to close inspection by the Department. No vault may lawfully be cleaned or disposal made of its contents except under the observation of an inspector who is also charged with making an official measurement of the quantity of soil removed, which measurement serves in disputed cases as the basis of payment of the cleaning bill.

Although an occasional evasion of these requirements occurs in regard to a few vaults located in the remote outskirts where the temptation of the owner to clean them without the intervention of

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the scavenger is great, these violations are less frequent than formerly.

The officials who are cognizant of the present methods and the nature of the employment believe that it would be highly desirable for the city to do this work by day labor rather than to continue the system of licensed scavengers working under contract with each of the individual owners.

Housing Conditions.

The most important activity of the bureau, the investigation and improvement of the housing conditions which prevail in congested and neglected neighborhoods of the city, has not, to the present time, been dignified by organization into a separate division. The investigations described by the City Homes Association in their report published in 1901, set forth in detail the bad conditions which prevail in three areas of considerable size, including more than sixty city blocks. Further study of certain portions of this area in 1905 showed that the conditions described in the report prevailed at that time, with the exception that the streets and alleys were in much better conditions, considerable paving having been done in these localities. The results of these studies show conclusively that the congestion within the houses had not decreased and that bad repair and dilapidation were still to be found on many premises. The Department has been able to make some canvass in the most neglected neighborhoods, covering, during 1909, one hundred blocks, and in 1910 one hundred and twenty blocks. Its force, however, is insufficient to continuously pursue this work month after month as is necessary to effect satisfactory and permanent results.

The greatest need at the present time is a housing survey which shall afford a basis of public action to better the conditions of existing dwellings. Since this appears impossible at the present time, the Department advocates most strongly that a housing census be made which will determine certain essential facts in relation to conditions known to be bad, as, for example, the number of dark rooms, the number of bad cellars used for living purposes, premises in such condition of repair as to justify vacation, etc. Such a census would afford valuable data, now lacking, as to the extent of prevailing tenement evils in this city, and would unquestionably show such serious results as to enlist public action in removing some of the causes, at least, of these conditions.

In October, 1908, the School of Civics and Philanthropy, with the co-operation of certain other civic societies, undertook in its research department a limited study of housing conditions. Up to the present time three partial reports have been published, only one of which, just available, relates to the housing of families and covers the observations made in the congested territory at the southwest of the union stock yards. It is hoped that the further publica-

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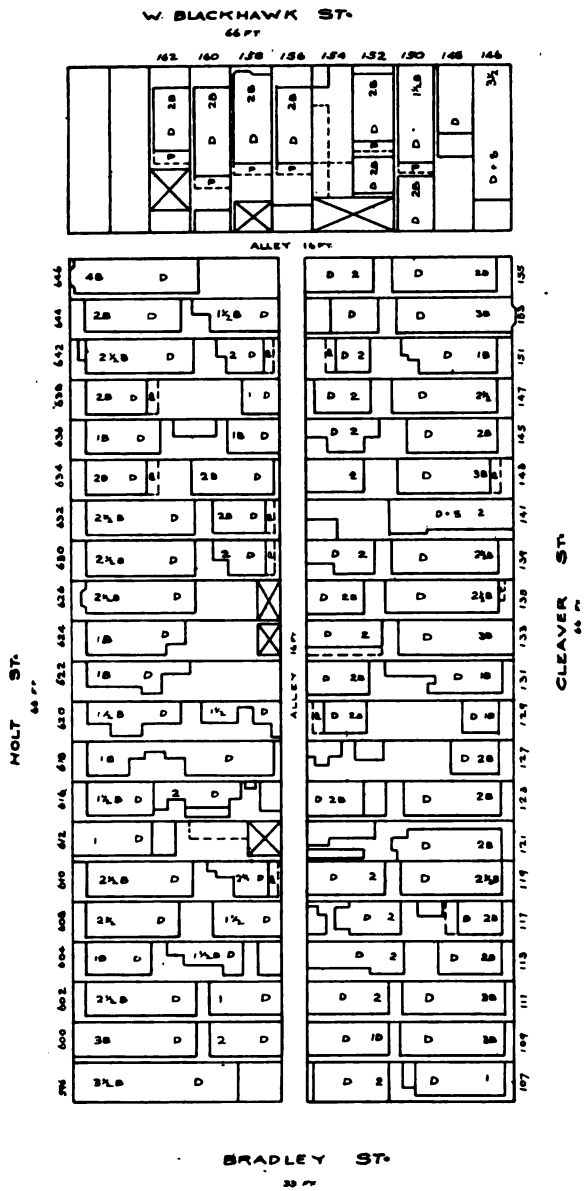

MAP OF CONGESTED CITY BLOCK.

Over 450 families and about 1,600 people live in this block.

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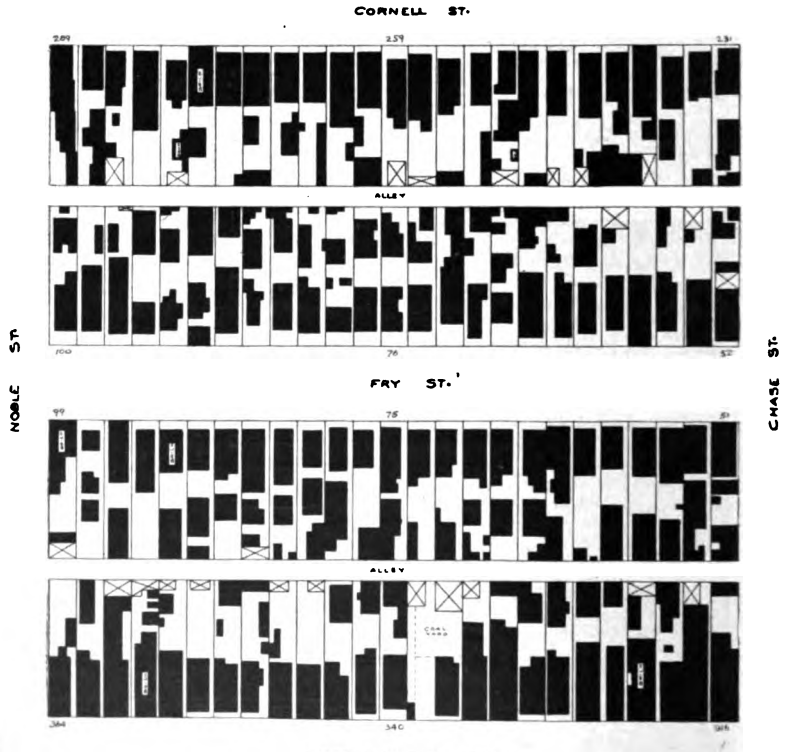
tions will result in an increased knowledge of the situation which prevails and afford some suggestions as to means of remedy.

In this connection it may be desirable to note the control of plans of new tenements, exercised by the commissioner of health under the State law of May 30, 1881. While it is true that this law contains no detailed requirements, the general powers given therein are of great value in some cases. The Department has taken an active interest in the revision of the building code, especially the tenement portion, which was in progress for more than two years,



MAP OF SITE CONDEMNED IN 1907 FOR WEST PARK NO. 1.
100 houses fronting on street; 65 on alleys.

	Front Houses.	Rear Houses.
1-story	24	33
2-story	66	31
3-story	10	1
	100	65

Of these 165 houses, 117 were demolished by the owners voluntarily; 17 were refused moving permits and were demolished.

31 houses were moved, 2 of which were moved long distances, 29 within a radius of 4 blocks. 16 moved to lots already containing 1 house; 4 to lots of too small size for 2 houses; 9 to lots which did not contain any other houses. The 29 houses moved contain 288 rooms, 97 families and 399 people.

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and terminated in the passage of the new ordinance, December 5, 1910. While some improvements were secured in this revision of the tenement law, it is not believed that its provisions are sufficient even now to adequately provide light and air for tenement dwellings.

Board of Survey.

The board of survey, composed of a medical inspector, a sanitary inspector and a building inspector, organized and empowered under section 1066 of the revised municipal code for the purpose therein set forth, was reorganized September 27, 1908.

The duties of this board are: To inspect any building alleged to be a public nuisance in conformity with section 1066, revised municipal code, and report its findings to the Commissioner of Health.

If the board finds that a public nuisance exists, a notice is served upon the owner or agent for the demolition or repair of the building. If at the expiration of the time limit given, usually thirty days, the notice has not been complied with and there is no evidence of intention to do so, the Fire Marshal is called upon to supply the necessary service for the demolition of the building.

The work of the board of survey was allowed to lapse for several years, causing the accumulation of a number of cases requiring action by this board, and resulted in its reorganization. Dr. George C. Hunt of the ambulance service; James A. Short, chief building inspector, and Thomas J. Claffy, assistant chief sanitary inspector, were appointed members of the board. Since April, 1910, Dr. Heman Spalding, chief medical inspector, has served as a member of the board, taking the place vacated by Dr. George C. Hunt on the latter's transfer with the ambulance service to the Police Department.

From September 27, 1908, to December 31, 1910, the board of survey has accomplished the following:

	Buildings Examined	Demolished	Repaired	No Cause for Reference	Referred to Building Department
September 27, 1908, to 1910	85	55	24	3	3
Year 1910	40	7	12	.....	6

Cases pending, 15,—contracts let for either demolition or repair.

The work has been accomplished without court proceedings in any case. Several of the notices now pending are against non-resident property owners, making delays unavoidable. In some cases an extension of time was given, willingness to comply with orders being shown. The work requires considerable time and the activities of the present board have been retarded by the numerous other duties of its individual members. Much more could be accomplished by a board organized for this purpose.

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Free Public Baths.

The Carter Harrison Bath, which was opened January, 1894, was the first free municipal bath in Chicago, if not the first in the world. Other large cities, especially those in Europe, have had municipal baths, but so far as known none were absolutely free, though the fee charged was merely nominal.

From the one bathhouse with its seventeen showers there has been a gradual increase until there are at present fifteen bathhouses, representing an outlay of $290,939. In addition to this, baths are also given to men and boys at two of the pumping stations. During the year 1910, 1,070,565 baths were given.

That the benefit has been shared by those outside of Chicago is shown by the following quotation from a letter written by Dr. Simon Baruch, the originator of the free municipal bath idea, to the secretary of this Department:

"Chicago was the first city in the world to take up my idea that public baths should be free. You have demonstrated to the world that the view I announced in 1890, which regarded the public bath as a hygienic necessity to be provided by cities, like public parks, and which was at that time regarded as Utopian, was sound and practical. I could not convince anyone of the three mayors to whom I appealed for this boon to the working people of New York, even after your city had offered a practical demonstration that the people would use these baths.

"Only by circumventing the city authorities and aiding in the application of a law applicable to all large cities in this State (passed in April, 1895), and even after its passage urging its execution by threats and prayers, did I succeed in having the Rivington street bath constructed and put into successful operation. This bath gave 700,000 people a chance for cleansing their toil-stained bodies in 1904.

"The last three administrations have emulated each other in the construction and planning of new baths, so that in a short time this city will furnish bathing facilities that will cleanse the bodies of ten million persons annually.

"How much I owe to Chicago, and how much the world owes to this wideawake people, this brief history demonstrates."

The greatest number of people are bathed during the summer months, yet it is the policy of the Department to encourage the patrons to come regularly. That considerable progress has been attained in this direction is shown by the fact that where the bathhouses have been established the longest there is the least fluctuation in the number of baths given. School children and workingmen patronize the baths the most, and the large number of children that bathe during the summer months accounts in a large measure

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for the great difference between the number of summer and winter bathers.

Under ordinary circumstances, the showers are emptied and filled every thirty minutes, of which eight minutes are allowed under the showers, the rest of the period being consumed in dressing and in cleaning the showers after the patrons leave. However, by reducing the time under the showers to five or six minutes, and with the best of co-operation from the patrons, some superintendents have been able to empty the showers every fifteen or twenty minutes, thus greatly increasing the number of baths given.

As far as practicable, all bath houses are built along uniform lines. Formerly nearly all were equipped with living apartments for the superintendent, but these have been omitted in the last two bath houses erected. A change has also been made in the arrangement of the shower in the bath room proper, so that now some of the bath houses are partially equipped with open showers. In the Loeffler and Henrotin bath houses one-half of the showers is inclosed in separate stalls, while the other half is in one large, open room.

The Baruch Bath, opened in April, 1910, is the largest municipal bath house in the city and the only one with separate accommodations for men and women. During the summer this is open each weekday to both men and women, while at the other bath houses two days of each week are reserved for the women bathers.

During the last year the Department has also found it possible to conduct the bath houses without having policemen stationed at each one. More and more the people are beginning to realize that the bath house is not a place for diversion, but for utilitarian purposes only.

The working force at the majority of the bath houses is as follows:

One superintendent, salary	$1,200.00
One fireman, salary	900.00
One helper salary	660.00

making a force of three people at a yearly cost of $2,760.

Location, Cost, etc.: Following is given the location of the various free public baths, the cost of each, including ground and equipment, and the date of opening:

Ward 3—Martin B. Madden; location, 3825 Wentworth avenue. Cost of ground, 50x125 feet, $5,000; building and equipment, $15,361; total, $20,361. Opened April, 1897.

Ward 4—John Wentworth; location, 2839-41 South Halsted street. Cost of ground, 50x130 feet, $2,850; building and equipment, $16,703.04; total, $19,553.04. Opened December, 1905.

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Ward 5—William B. Ogden; location, 3346-48 Emerald avenue. Cost of ground, 48x124.5 feet, $1,650; building and equipment, $16,-240.54; total, $17,890.54. Opened July, 1906.

Ward 9—William Loeffler; location, 1217 South Union street. Cost of ground, 24x108 feet, $3,500; building and equipment, $17,-560.64; total, $21,060.64. Opened February, 1909.

Ward 10—Pilsen; location, 1849 Throop street. Cost of ground, 50x125 feet, $5,000; building and equipment, $19,155.07; total, $24,-155.07. Opened March, 1908.

Ward 11—Simon Baruch; location, 1911 West Twentieth street. Cost of ground, 50x100 feet, $1,600; building and equipment, $24,-676.82; total, $26,276.82. Opened April, 1910.

Ward 15—Joseph M. Medill; location, 2138-40 Grand avenue. Cost of ground, 50x100 feet, $1,839; building and equipment, $15,418.84; total, $17,257.84. Opened September, 1906.

Ward 16—Kosciuszko; location, 1444-46 Holt avenue. Cost of ground, 48x125 feet, $3,350; building and equipment, $14,410; total, $17,760. Opened April, 1904.

Ward 17—Theodore T. Gurney; location, 1139-41 West Chicago avenue. Cost of ground, 40x121 feet, $5,000; building and equipment, $16,730.43; total, $21,730.43. Opened May, 1906.

Ward 18—Robert A. Waller; location 19 South Peoria street. Cost of ground, 25x125 feet, $3,270; building and equipment, $10,-106.60; total, $13,376.60. Opened February, 1901.

Ward 19—Carter H. Harrison; location, 759 Mather street. Cost of ground, 25x118 feet, $4,230; building and equipment, $16,899.40; total, $21,129.40. Opened January, 1894.

Ward 22—DeWitt C. Cregier; location, 1153-55 Gault court. Cost of ground, 50x100 feet, $3,750; building and equipment, $14,-794.33; total, $18,544.33. Opened October, 1905.

Ward 24—Fernand Henrotin; location, 2415 North Marshfield avenue. Cost of ground (irregular, 38 feet in front, 80 feet in rear, 125 feet deep), $5,000; building and equipment, $2,042.53; total, $25,042.53. Opened September, 1908.

Ward 29—William Mavor; location, 4645-47 Gross avenue. Cost of ground, 50x122 feet, $2,000; building and equipment, $5,326.57; total, $7,326.57. Opened May, 1900.

Ward 30—Thomas Gahan; location, 4226-28 Wallace street. Cost of ground, 40x125 feet, $2,189; building and equipment, $17,-285.62; total, $19,474.62. Opened November, 1907.

Total number of free public baths..... 15

Total cost of ground.....$ 50,228.00
Total cost of buildings and equipment.... 240,711.43

GRAND TOTAL COST.....$290,939.43

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During the year 1910 the following changes were made in the administration of the bath houses:

A new record blank showing the number of persons bathed has been adopted. This shows the actual number bathed each hour, each day, and the total number of men, women, boys and girls bathed during the entire month.

Regular schedules, as nearly uniform as possible, have been provided for each bath house. Each employe keeps a card record of the number of hours of service rendered on a specially devised time card. At the end of the week these cards are certified by the different superintendents and forwarded to the main office.

TOTAL NUMBER OF BATHS GIVEN EACH MONTH OF YEARS 1907, 1908, 1909 AND 1910.

	1907	1908	1909	1910	Averages by Months
January	51,701	43,368	49,582	47,885	48,134
February	46,345	42,801	50,540	45,517	46,300
March	63,389	63,975	72,066	77,975	69,351
April	55,245	81,297	74,392	81,105	73,009
May	54,764	102,195	79,445	82,284	79,672
June	70,090	118,137	108,208	132,983	107,354
July	95,306	110,479	159,776	173,222	134,695
August	90,240	85,631	148,697	154,674	119,810
September	50,604	70,549	99,546	92,311	78,252
October	42,100	62,139	82,211	72,477	64,731
November	45,567	37,188	70,949	52,246	51,475
December	44,471	44,348	48,970	57,886	48,918
Total	709,822	862,057	1,044,382	1,070,565	921,701

Total for four years.....3,686,826.

HEALTHGRAMS.

From *The Bulletin.*

To feel hot—talk hot.

* * *

To keep cool: Don't talk hot.

* * *

"Go jump in the lake"—it's cooling and cleansing.

* * *

Bath tubs are not luxuries—they're necessities.

* * *

Do not allow your social functions to pervert your natural functions.

* * *

An effective health prayer—the daily use of the tooth brush on rising and retiring.

* * *

Regular bathing prolongs life; underbathing causes overwork for kidneys and liver.

* * *

"Cleanliness is next to godliness," but it takes many godly people a long time to get next.

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CHICAGO FREE PUBLIC BATHS.

Number of Baths Given During the Years 1894 to 1910, Inclusive.

NAME OF BATH	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894
Harrison	55,102	47,077	Closed	42,819	131,891	164,736	159,473	174,276	172,644	188,972	219,040	104,108	78,746	106,233	90,696	92,796	91,379
Opened Jan., 1894.																	
Madden	69,753	74,371	74,846	79,527	112,539	121,208	119,372	120,647	119,027	121,458	137,936	105,240	109,922	84,199			
Opened April, 1897.																	
Mayor	43,498	46,347	53,220	44,082	35,098	80,674	84,665	99,237	101,460	86,788	63,500						
Opened May, 1900.																	
14th St. Pump. Sta.	41,970	34,228	40,823	34,399	47,033	37,950	25,554	30,771	47,200	58,799	28,204						
Opened June, 1900.																	
22nd St. Pump. Sta.	27,925	29,512	34,542	32,855	32,138	33,951	32,136	29,460	25,798	22,189	9,600						
Opened June, 1900.																	
Waller	63,189	62,395	91,999	73,144	98,120	102,630	109,147	97,505	87,272	74,083							
Opened Feb., 1901.																	
Kosciuszko	81,970	88,458	106,718	98,120	112,601	132,225	114,632										
Opened April, 1904.																	
Gregier	53,061	56,995	63,491	56,795	70,834	15,950											
Opened Oct., 1905.																	
Wentworth	52,173	58,221	41,588	49,342	77,147	3,747											
Opened Dec. 1905.																	
Gurney	66,812	71,127	56,666	50,404	49,050												
Opened May, 1906.																	
Medill	63,468	82,260	71,418	77,575	15,873												
Opened Sept., 1906.																	
Ogden	68,420	76,654	62,457	64,193	42,991												
Opened July, 1906.																	
Gahan	46,919	43,404	54,405	6,571													
Opened Nov., 1907.																	
Pilsen	101,056	101,183	90,274														
Opened March, 1908.																	
Henrotin	67,556	67,516	19,610														
Opened Sept., 1908.																	
Loeffler	101,190	104,634															
Opened Feb., 1909.																	
Baruch	66,516																
Opened April, 1910.																	
Total	1,070,565	1,044,382	863,057	709,826	825,315	698,071	644,979	551,896	553,401	552,289	458,280	209,348	188,668	190,432	90,696	92,796	91,379

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MUNICIPAL LODGING HOUSE.

The City of Chicago, in connection with the City Homes Association, opened a municipal lodging house for men December 21, 1901, at 12-14 South Jefferson Street. The work was continued at this location until April, 1904, when, owing to the fact that the property was rented for other purposes, the house was closed. The city then had in its possession an old store at 162 North Union Street. This was remodeled and the lodging house again opened December, 1904, since which time it has been in continuous operation with the exception of a period of two months in the fall of 1909.

When first opened, the municipal lodging house was under the Department of Police, but on January 1, 1908, it was transferred to the Department of Health and placed under the supervision of Dr. George C. Hunt, Chief of the Ambulance Service. It remained under his direction until May 18, 1910, when it was transferred to the Bureau of Sanitation and placed under the control of Mr. Charles B. Ball. The immediate supervision of the lodging house was at the beginning for the first month under Robert M. Hunter. Raymond Robins assumed charge in January, 1902, being certified to the position by the Civil Service Commission in November, 1902, continuing as Superintendent until October, 1905, when the duties were transferred to James Mullenbach. Mr. Mullenbach resigned August 18, 1909, and Charles F. Rogers, the present incumbent, took charge October 21, 1909.

At the time the municipal lodging house was transferred to the Health Department, between 700 and 800 men were being cared for each night. These men were lodged in three different buildings, viz: the municipal lodging house proper at 162 North Union Street, which had accommodations for about 200; the municipal lodging house annex at 33 West Washington Boulevard, which accommodated about 150; and the Tribune house, managed and supported by the Chicago Daily Tribune at 59 S. Canal Street, which accommodated about 350. In addition, a home for convalescent men with room for about twenty-five persons was opened at 19 S. Peoria Street. The Tribune house remained in operation until March 25. The Home for Convalescent Men and the municipal lodging house annex were not closed until April 1, 1908.

The plan under which these different lodging houses were operated was as follows:

All men were required to register each night at the municipal lodging house. Those applying for the first time were also lodged there that night. The other applicants were distributed among all three houses and rotated in such a manner that each man was returned to the municipal lodging house every fifth night in order to receive a bath and to have his clothing fumigated. Work on the streets and bridges was also provided for a number of the men,

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three days board being given in pay for one day's work. These men were given three meals a day instead of two, the number usually given to the ordinary lodger.

The annex was again opened February 1, 1909, and remained in operation until the middle of the following March, but on account of the general industrial situation in the fall of 1909 and also because of the large amount of work to be had in snow shoveling during the following winter, no annex was needed that season. The house was not crowded until late in February, 1910, and, because of the extremely warm weather in March, the railway construction camps opened early, so that by the middle of the month the number was reduced to 150 men per night. However, by December, 1910, the men were applying in such large numbers that it was thought likely that an annex would be needed later in the winter.

When the municipal lodging house with the other two buildings came under the supervision of the Department of Health, January 1, 1908, a close study of the comparative value of different kinds of food was made and a bill of fare for the lodgers was so adjusted as to give them a sufficiency of food of the right kind to give the greatest food energy without making the cost too great. For example, we found that broiled spring chicken with a gram calories of food value of only 505 units per pound did not compare in any way with a piece of boiled beef, with a gram calories of 1,620 units per pound, or with a loaf of bread with a food value of 1,205 gram calories per pound; it compared neither in price or efficiency.

A comparison of the rations issued to the soldiers of the different powers while in the field and of the diets of artisans and mechanics while engaged in their daily toil was made and it was found that the German Empire afforded the fairest average. From these studies it was determined that a sustenance or living diet for a man without labor necessitated the consumption of food giving a total of 1,800 calories per day, while the laboring man required 3,200 calories per day. Therefore the bill of fare was arranged so as to supply the lodgers with an average of 3,100 calories per day;—plenty, in view of the fact that they were working but six hours one day in three. This bill of fare consisted of bread, butter, coffee, sugar and molasses for breakfast; bread, coffee and a meat stew for dinner; bread, coffee, sugar and a beef or mutton soup thickened with split peas, barley, rice, beans, turnips, onions or carrots, for supper.

Examination of the men as they were bathed before going to bed showed that 70 per cent were in normal physical condition, 17 per cent were overfed and 4 per cent underfed.

The actual cost of maintaining the lodging houses and feeding the men for the month of January, 1908, is shown in the appended

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table. This is instructive, as it shows at what small expense a single man can be provided with food, lodging, bath and laundering.

Coffee	$ 80.61
Beef and soup bones	41.22
Potatoes	38.07
Sugar	7.56
Bread and butter	260.00
Vegetables—beans, carrots, onions, barley, rice	34.92
Lighting—gas and electric	30.99
Heating—hard and soft coal	205.50
Salaries of attendants	251.66
Total	$950.53
Total lodgers during January	10,490
Average cost per man per day for food only	4.4 cts.
Average total cost per man per day	9 cts.

The expenses of the other months were about the same.

The Tribune spent $8,200, giving 36,916 lodgings, nearly three times as many meals, and incidentally furnished, thus indirectly, many days' labor to the city. Most of this $8,200 was expended in installation and equipment. During the latter portion of the time tubs were provided allowing the men to wash their clothes.

The results of this experience may be briefly summarized as follows:

1. Chicago public was protected against contagion.
2. The homeless men were kept clean, healthy and free from suffering.
3. Some unworthy, idle and drifting criminals were forced out of Chicago.
4. Some innately honest but weak men were shielded from being driven into crime.
5. It was demonstrated that men can be sufficiently fed for health and strength for less than 7 cents a day.
6. Feeding, housing, heating, bathing and medical supervision can be done (without rent items) for 9 cents a day.
7. That lodging houses can be kept clean, well ventilated, not overcrowded, giving a bath and sufficient heat, and run at a good profit for less than 10 cents a bed.

Our tenancy and that of the Tribune expired April 1. The maximum attendance of 1,234 on March 22, was gradually reduced without friction to 295 at time of closing. The men, in the main, left the city. They were not our citizens and it was not right, nor did humanity longer demand, that they should remain here to compete with our home labor.

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May we not draw three general lessons from this experience? First: Most men eat far too much and they would be far happier, far healthier and far more capable of resisting disease if they would eat much less. Second: A scientific study of foods would make it possible for a large proportion of the population getting small wages to save and accumulate some portion thereof. Third: Taking a comprehensive view, humanity is economy.

The statistics previous to 1910, which are based upon the actual number of lodgings given, show a gradual increase in the percentage of foreigners applying for assistance, with a decisive majority during times of great financial depression when the house is crowded. Statistics for 1910, which are based upon the actual number of men applying, show more Americans than foreigners applying for aid, but the foreigner staying a greater number of nights. Two reasons may be assigned for the predominance of the foreigner. The first is that many of them are unskilled laborers dependent almost entirely upon construction work in summer, and ice cutting and snow shoveling in winter. The second reason is that many of them are men of families in the old country, and a large portion of their summer wages is sent to Europe.

Very interesting data regarding this fact were collected. One man admitted sending home $2,000 in four years, the money being used to purchase a farm. Fifteen applicants sent home $6,625 in periods varying from three months to four years. The entire appropriation for the municipal lodging house for 1910 was $7,000.

Unskilled laborers have always predominated. Records for the first eight years show that an average of 74.3 per cent of the lodgings were given to men between twenty and fifty years of age. Statistics for 1910 place the number of men between the years of twenty and fifty applying for aid at 83.3 per cent.

An investigation of the past records of applicants has been conducted during the past year, and in this the Superintendent has been very ably assisted by the police and the charity organization societies both in Chicago and other large cities. The majority of these reports are decidedly unfavorable to the applicant. Many of them disclose him to be a candidate for the work farm rather than an object of charity. One man claimed to have no relatives nearer than Boston. His own family whom he had deserted were located in Chicago. A large number of applicants were men who had been assisted time and again by their immediate relatives only to return to their former associations of vice and crime as soon as they were released from close supervision. It is the latter class and the semi-vagrant who present the greatest problem to the management of the municipal lodging house. At present the city affords no opportunity for the gradual elimination of these classes. They are more

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MUNICIPAL LODGING HOUSE STATISTICS.

	1902	1903	1904	1905	1906	1907	1908	1909	1910
Number of lodgings given	11,097	5,826	18,872	14,235	13,503	23,642	105,564	69,980	36,710
different men lodged								12,000	12,104
Americans received	6,319	3,185	10,548	6,994	6,862	11,732	44,609	27,396	6,346
foreigners received	4,778	2,641	8,324	7,241	6,641	11,910	60,955	42,584	5,758
skilled laborers received	3,568	1,775	6,339	6,339	5,600	8,919	40,389	25,432	4,015
unskilled laborers received	7,509	4,051	12,533	12,533	7,903	14,723	65,175	44,548	8,089
cripples received	197	167	586	528	640	808	2,473	2,596	193
lodgers under 20 years of age	923	661	1,288	1,083	1,081	1,511	4,911	3,774	648
20 to 30 years of age	2,971	1,457	6,438	4,407	3,722	7,205	34,685	21,244	4,686
30 to 40 years of age	3,066	1,361	4,676	3,473	3,299	5,933	26,733	16,408	3,281
40 to 50 years of age	2,197	1,208	3,371	2,745	2,644	4,755	20,298	14,506	2,110
50 to 60 years of age	1,335	802	2,066	1,757	1,856	3,079	13,992	10,200	1,003
over 60 years of age	605	337	1,032	770	901	1,159	4,945	3,848	376
Number sent to county agent	164	69	150	193	218	272	312	199	350
county hospital	137	59	175	100	111	116	240	163	263
charity organizations*	142	51	93	65	34	37	56	19	222
dispensaries	148	119	603	972	1,050	1,598	3,648	740	441
paid employment	2,397	1,752	5,682	4,960	5,564	5,568	8,119	5,162	1,727
arrested		8	29	22	28	37	69	32	33

Statistics for 1902 to 1909 are based upon number of lodgers; for 1910 on number of different men lodged.

*Excepting for the year 1910, include only those sent to the bureau of charities.

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or less of a burden to the community now and are placing themselves in such a position that they will become a greater burden hereafter. It is this class that leads us to recommend that steps be taken to secure a work farm to which may be sent the inebriate, the man suffering from venereal diseases, and the vagrant of all types.

To such an institution also the man who is "down and out" temporarily may commit himself voluntarily in times of financial depression with the assurance that in return for a reasonable amount of labor he will receive board and lodging until he is certain that he can secure regular employment elsewhere.

With such an institution, the city could put itself in a position to gradually eliminate a portion of those now being cared for at the municipal lodging house. The community would be benefited financially as well as morally, and the individual would become a productive member of society.

Use of Photographs.

There has been during the year an increased use of photography for the purpose of recording objectionable conditions and for the furnishing of evidence in suits brought by the Department. The presentation in this graphic form of the objectionable conditions is more convincing than any verbal or written statement.

Personnel.

The total force of inspectors and clerks in 1907 comprised fifty-three persons. This has been increased to eighty-five persons, in addition to which there were transferred to the supervision of the sanitary bureau on May 17, 1910, the control of the public baths and municipal lodging house, the employes of which number forty-nine persons. In connection with the supervision of private scavengers and dumping, there were transferred three additional employes to this bureau on January 1, 1910. The total number of the field force is now seventy-four; of office force, fourteen; employes of the baths and lodging house, forty-nine.

This increase of force, and especially the appointment of four supervising inspectors on August 12, 1908, has resulted in marked advantage to the operations of the bureau, not alone by reason of increase in numbers, but also because of the increase in efficiency resulting from more close supervision of the field work. The commissioner and chief inspector have frequently expressed and here repeat their appreciation of the co-operation of the employes of this bureau in maintaining proper standards for their work and in increasing the efficiency of the service.

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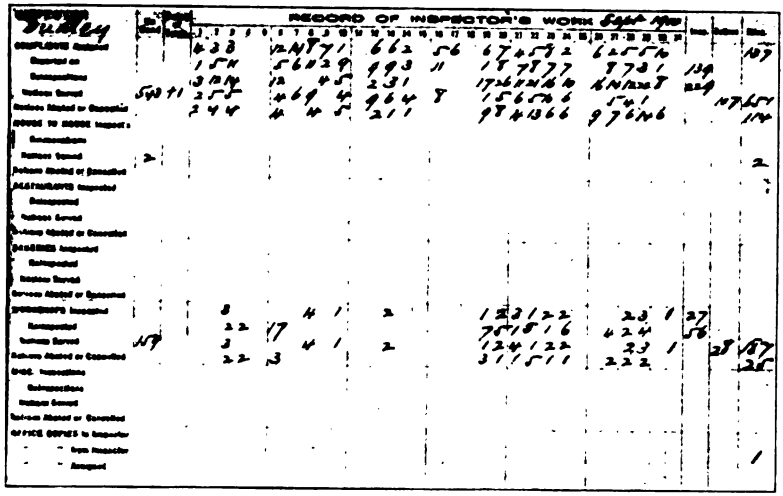
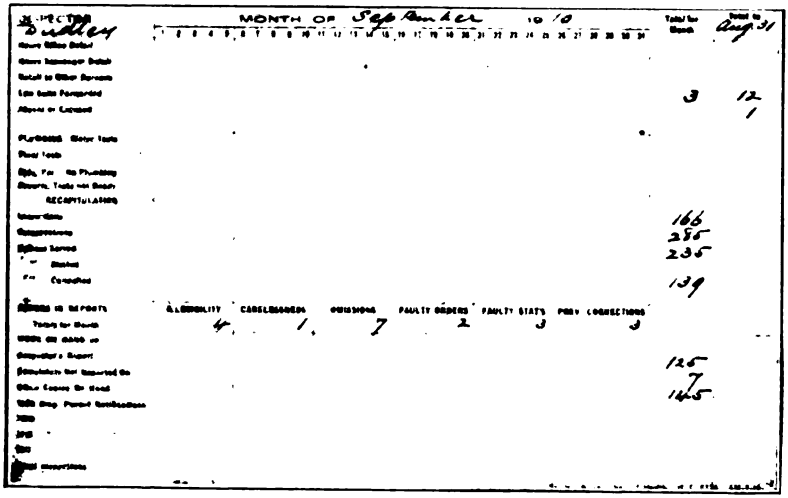


MONTHLY SUMMARIZED RECORD OF DAILY WORK PERFORMED BY AN INSPECTOR.



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STATEMENT OF OPERATIONS OF BUREAU OF SANITATION 1907 TO 1910.

	1907	1908	1909	1910
Complaints assigned for inspection	10,564	14,600	14,770	15,100
Plumbing inspections	25 782	28,886	26,359	30,386
Other inspections (excl. compl'ts and pl'b'g)	10,545	21,698	27.466	26,868
Inspections (Total for all classes)	47,891	65,184	68,891	72,644
Reinspections		40,868	66,174	76,233
Notices served	18,724	21,266	23,281	23,268
Notices abated	18,853	20,837	19,378	20,975
Workshop inspections	9,610	7,183	7,758	7,512
Plans of new buildings examined	9,787	11,266	9,751	9,311
Law suits instituted	650	1,094	602	591
Complaints assigned	*	*	14,770	15,100
Complaints reported on			15,064	15,370
Reinspections			24,291	27,718
Notices served			10,139	10,630
Notices abated			8,705	10,114
House to house inspections			6,219	5,972
Reinspections			12,169	9,879
Notices served			3,925	3,750
Notices abated			3,165	2,999
Restaurant inspections			3,980	3,605
Reinspections			11,174	15,377
Notices served			1,566	1,086
Notices abated			1,457	1,149
Bakery inspections			1,157	1,970
Reinspections			3,555	5,995
Notices served			548	897
Notices abated			1,068	737
Workshop inspections			7,758	7,512
Reinspections			2 903	4,426
Notices served			1,484	1,211
Notices abated			879	1,271
Miscellaneous inspections			8,654	7,889
Reinspections			12,082	12,838
Notices served			5,899	5,694
Notices abated			4,104	4,205
Plumbing inspections—Detail				
Water tests	10,951	11,690	12,413	13,433
Final tests	11,951	13,856	11,836	12,321
Other plumbing inpections	871	800	2,110	4,632
DETAILS OF BUILDING PLANS EXAMINED:				
Plans of new buildings approved	10.674	12.672	10,113	9,397
Number of new buildings	9,787	11.266	9,751	9,311
Residences, one family each	1,404	1.500	1,585	1,102
Flats, tenements and apartments	4,053	5,091	15,042	11,040
Flats over stores	1,181	1.511	1,410	1,261
Flats in rear of stores	400	505	349	426
Cottages, for one family each	2,201	1.771	1,676	2,285
Stores, storage and other warehouses	772	702	1,840	1,319
Factories and shops	372	329	475	358
Stables and barns	291	314	298	412
Hotels, theatres, halls and office bldgs.		350	353	241
Families provided with homes	14 881	19,165	20,068	17,518
Number of two and three flat buildings			3,681	3,467
Number of buildings over three apartments			709	778
LICENSES ISSUED:				8 mos.
Restaurant licenses issued	1,635	1.824	1,909	1,880
Bakery licenses issued	1.110	1,080	1.114	1,098
Workshop licenses issued	3,187	3,296	3,389	3,606

*New system of records instituted in 1909.

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SUMMARY OF ABATEMENTS OF INSANITARY CONDITIONS.

By Months for Year 1910, Totals by Years 1907-1910.

ABATEMENT DETAILS	1910—BY MONTHS												TOTALS			
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1910	1909	1908	1907
Total abatements	920	1,099	1,502	1,797	1,551	1,517	968	1,232	2,150	2,812	2,660	2,767	20,975	19,378	20,237	18,853
Defective plumbing repaired	198	378	595	663	448	475	276	348	623	731	940	1,082	6,757	3,080	4,727	2,574
Defective drains repaired	21	26	31	41	56	48	38	21	85	51	81	100	598	837	784	798
New drains put in and connections made	.....	7	7	16	11	14	6	5	12	34	15	30	157	122	119	191
Catch basins built	.....	1	1	2	6	3	.....	2	11	3	1	2	32	22	103	107
Catch basins cleaned	12	15	29	17	26	32	29	24	47	70	73	60	434	478	433	532
Catch basins repaired	4	9	76	170	19	39	7	14	36	105	141	53	673	496	214	166
Ventilation applied to living rooms	2	1	4	10	7	5	1	4	17	8	5	9	73	97	97	120
Ventilation applied to water closet rooms	38	38	63	73	36	39	18	31	54	68	98	79	635	584	331	350
Ventilation applied to places other than habitations	10	14	14	19	10	13	19	19	9	26	35	23	211	261	66	91
Privy vaults cleaned	98	59	129	129	165	161	45	90	164	161	259	393	1,853	2,802	1,876	1,261
Privy vaults abolished	87	48	77	123	162	152	50	78	131	146	242	425	1,721	1,729	2,622	1,682
New water closets put in	141	114	195	242	255	224	108	125	203	366	421	614	3,008	2,965	4,015	2,553
Roof gutters provided	17	24	52	46	39	41	25	25	55	80	72	101	577	646	1,143	1,103
Roof gutters repaired	9	32	69	95	40	58	31	30	80	116	125	88	773	469	.....	.....
Rooms limewashed	124	184	537	677	391	409	308	398	444	709	763	797	5,741	1,795	1,256	522
Uninhabitable basements vacated	6	.....	12	8	7	1	2	2	6	21	12	10	87	57	46	26
Dirty yards cleaned	63	82	154	263	254	242	120	170	340	378	300	260	2,626	1,332	1,242	1,212
Dirty cellars cleaned	52	84	95	128	78	108	83	101	186	207	185	193	1,490	1,306	473	389
Unoccupied ground cleaned	8	6	21	26	41	28	12	20	27	37	20	33	279	268	137	293
Manure heaps removed	23	37	42	66	71	88	38	54	100	111	122	73	825	634	445	387
Water closet compartments cleaned	57	58	129	134	114	72	60	75	101	167	228	164	1,359	791	.....	.....
Water closet bowls cleaned	128	131	261	257	141	114	74	97	193	286	330	220	2,222	1,500	.....	.....
Workshops discontinued as living rooms	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	3	4	9	5	.....	.....
Garbage receptacles provided	81	94	56	120	177	80	80	136	219	223	280	198	1,744	1,541	.....	.....
Water supply provided for plumbing fixtures	68	88	103	98	92	77	78	44	92	128	139	106	1,113	599	.....	.....
House drains and sewers cleaned	29	28	32	36	38	42	40	43	22	107	59	64	540	468	.....	.....
Water closets removed from unsuitable locations	5	13	23	17	17	20	13	6	15	14	25	22	189	181	.....	.....
Urinals removed from unsuitable locations	1	13	25	48	10	14	6	7	3	41	29	36	233	398	.....	.....
Manure boxes provided	9	16	19	30	21	22	14	19	62	74	41	21	348	268	.....	.....
Dark halls and stairs lighted	10	14	16	14	15	7	6	5	16	29	21	36	189	145	.....	.....
Miscellaneous	800	670	697	790	714	689	599	607	1,085	1,124	1,358	1,217	10,350	16,941	5,821	3,636

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COMPARATIVE STATEMENT OF NUMBER OF LICENSES ISSUED AND FEES COLLECTED.

Revenue derived therefrom for the years 1907, 1908, 1909 and 1910.

Kind of License	Annual license fee	1907		1908		1909		1910	
		No.	Rev.	No.	Rev.	No.	Rev.	No.	Rev.
Slaughtering and Rendering	$300.00	37	$11,100	36	$10,800	37	$11,100	40	$12,000
Rendering Tank	20.00	272	5,480	270	5,400	282	5,640	289	5,780
Soap Making	150.00	10	1,500	9	1,350	11	1,650	14	2,100
Tannery	50.00	24	1,200	25	1,250	25	1,250	26	1,300
Offal Scavenger	100 00	11	1,100	10	1,000	10	1,000	11	1,100
Night Soil Scavenger	50 00	9	450	5	250	3	150	3	150
Private Scavenger	5 00	146	730	157	785	149	745	163	815
Bathing Beach	15.00	9	135	6	90	6	90	6	90
								(9 mos.)	
Restaurant	15.00	1635	24,525	1824	27,520	1909	28,825	1912	28,894
Bakery	5.00	1110	5,550	1030	5,162	1114	5,580	1122	5,648
Workshop	2 00	3187	6,374	3296	6,578	3389	6,786	3652	7,310
Total Licenses		6150		6668		6935		7288	
Total Revenue			$58,144		$60,185		$62,816		$65,187
Plumbing Plan Inspection Fee			$30,130		$38,091		$42,536		$42,148
Total Revenue Collected			$88,274		$98,276		$105,352		$107,335

DISPOSITION OF LAW SUITS WHICH WERE INSTITUTED BY BUREAU OF SANITATION.

	1908	1909	1910
Suits instituted	391	602	591
Pending Jan. 1st	...	46	179
Withdrawn by Department	...	25	1
Disposed of	449	444	462
Pending at end of year	46	179	307
The cases were disposed of as follows:			
Non-suit	154	250	195
Non-suit, Department recommendation	...	69	157
Dismissed, no costs	44	29	22
Dismissed, with costs	152	185	41
$ 5.00 and costs	...	3	...
10.00 " "	17	9	4
15.00 " "	1	...	...
25.00 " "	56	12	9
35.00 " "	...	...	1
50.00 " "	16	2	3
75.00 " "	...	...	1
100.00 " "	8	4	1
150.00 " "	...	...	1
200.00 " "	1	...	2
Total Fines and Costs	$4,570.25	$2,183.75	$1,647.85
Total Fines Without Costs	$3,385.00	$ 905.00	$1,175.00

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REPORT OF
THE BOARD OF EXAMINERS OF PLUMBERS

W. A. EVANS, M. D.
Commissioner of Health
(Ex-officio) Chairman

C. J. HERBERT
Master Plumber

WM. W. PETRIE
Journeyman Plumber

WM. H. LUTHARDT
Secretary

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BOARD OF EXAMINERS OF PLUMBERS.

The Board of Examiners of Plumbers, operating under the revised ordinance of July 1, 1909, submits the following report for the first calendar year:

Master plumbers examined	181
Master plumbers failed	101
Master plumbers passed	80
After passing failed to take out certificates	3
Total passed in 1910 and took out certificates	77
Passed in December, 1909, and took out certificates in January, 1910	2
Total master plumbers certificates issued in 1910	79
Total master renewal certificates issued in 1910	929
Journeymen plumbers examined	1107
Journeymen plumbers failed	347
Journeymen plumbers passed	760
After passing, failed to take out certificates	9
Total passed in 1910 and took out certificates	751
Passed in 1909 and took out certificates in 1910	3
Total journeymen plumber certificates issued in 1910	754
Total journeymen renewal certificates issued in lieu of master certificates cancelled	65
Total journeymen renewal certificates issued on certificates issued by other boards	12
Total journeymen plumber certificates renewed	1114
Total receipts for the year 1910	$15,185.00

The number of master and journeymen plumbers examined does not indicate, in the smallest degree, the amount of work performed by the members of the board. Each one of the persons examined was given a shop test in which he was required to wipe a joint and a record was kept of the time consumed in the work and a mark was given according to the excellence of the joint itself. In addition to the shop test each applicant was required to answer in writing a number of questions regarding practical plumbing, and every answer was read by the members of the board and they fixed the value of each answer.

On account of the law being a new one a large number of the master plumbers engaged in the business in the City of Chicago failed to take out renewal certificates when notified by the board, and the board found it necessary to file suits against some of them for operating in violation of the law. The board also was almost daily in receipt of complaints against

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persons operating as master plumbers who never had certificates. Altogether the board filed 124 suits during the year 1910. Below is given the disposition of these cases:

Number	of	cases	fined	$ 5.00,	$ 2.00	costs	1
"	"	"	"	5.00,	7.50	"	15
"	"	"	"	5.00,	19.50	"	2
"	"	"	"	10.00,	7.50	"	2
"	"	"	"	10.00,	9.00	"	1
"	"	"	"	15.00,	19.50	"	1
"	"	"	"	20.00,	7.50	"	1
"	"	"	"	25.00,	7.50	"	2
"	"	"	"	25.00,	19.50	"	1
"	"	"	"	50.00,	7.50	"	1
"	"	"	"	.....	7.50	"	21
"	"	"	"	.....	9.00	"	1
"	non-suits account payment of renewal fee						22
"	" account defendant securing master certificate						15
"	non-suits on agreement to comply with law						2
"	" account surrendering master certificate and securing journeyman certificate						6
"	non-suits account no service						13
"	" account witness leaving City and lack of evidence						7
"	non-suits account death of defendant						1
"	" account defendant out of business						1
"	discharged						4
"	pending						4
Total							124

In almost every one of the above cases there were two or more continuances, and sometimes as high as five continuances. The secretary of the board or the members of the board were in court in each case insisting upon a strict compliance with the law.

Journeymen plumbers were also all notified to secure certificates, but it finally became necessary for the board to secure the assistance of the police department and two officers were detailed in each precinct to look after the plumbers working in new buildings. Over 100 journeymen plumbers were arrested, and this had the effect of driving hundreds of journeymen plumbers in to take the examination. We can safely say that there are very few master and journeymen plumbers operating in Chicago to-day without certificates.

When the present board was appointed it found that the records of the office had not been written up since 1902, and that the files were in a chaotic condition. The board, on account of not having the necessary clerks, was unable to remedy this evil, as it was overwhelmed with its examinations, and it was not until the present Secretary, William H. Luthardt, was appointed in February, 1910, that anything systematic was done towards straightening out the records. On account of the magnitude of the work, it became necessary to employ two temporary clerks, for 120 days, to write up the records. The routine work of the office became so large that an additional clerk had to be employed. The board also

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designed new certificates for master and journeymen plumbers, and whenever a certificate is renewed a new certificate is issued in each instance, instead of issuing an ordinary receipt as was done formerly.

Master plumbers' certificates are furnished on payment of fifty dollars fee; journeyman plumbers' fee, one dollar. The annual renewal fee for master plumbers' certificates is ten dollars; for journeymen plumbers, one dollar.

A summary report for the three years preceding 1910, is as follows:

1907—
Number of master plumbers' certificates issued..... 74
Number of journeymen plumbers' certificates issued.. 92
1908—
Number of master plumbers' certificates issued..... 78
Number of journeymen plumbers' certificates issued.. 30
1909—
Number of master plumbers' certificates issued..... 64
Number of journeymen plumbers' certificates issued... 85

Of the master plumbers' certificates issued, 3 were issued on account of payment made in previous years where no certificates had been issued. Thirty-one were issued at $5.00 each and 30 at $50.00 each. The law requiring the renewal of master and journeymen plumber certificates went into effect July 1, 1909.

Number of master plumbers' certificates renewed in 1909—645

Number of journeymen plumbers' certificates renewed in 1909—249

HEALTHGRAMS.

From *The Bulletin.*

Tight lacing is a narrow practice.

* * *

Laughter is the sunshine of existence; flood yourself with it, let it overflow to others.

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REPORT OF

THE MUNICIPAL LABORATORY

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THE MUNICIPAL LABORATORY.

General Review.

There is perhaps no one branch of the Health Department service which has undergone such extensive development as the municipal laboratory in the years 1909 and 1910. This development has been both quantitative and qualitative. The increase in the amount of work done, becomes apparent from a comparison of the tables showing the number of analyses made during the four years covered by this report; but of much more moment than the quantitative increase is the improvement in the quality of the service rendered, which has been brought about by thorough re-organization, acquisition of modern scientific equipment and the adoption of improved methods.

The most marked development has occurred along bacteriologic lines, and although there has been a reduction in the number of routine chemical examinations, chiefly water and milk analyses, the increase in the bacteriologic work has been sufficient to bring about an increase of forty-one per cent in the total number of examinations.

The total number of bacteriologic examinations in 1907 was 9,041; in 1910, the total number was 60,632. The total number of chemical analyses in 1907 was 67,641, of which 60,668 were milk tests and 6,430 water analyses. In 1910, the total number of chemical analyses was 45,664, of which 40,162 were milk tests and 814 water analyses. This represents an increase in the number of chemical examinations, other than water and milk, of from 543 in 1907 to 4,688 during 1910. The total number of examinations, both chemical and bacteriologic, in 1907 was 76,682; in 1910, the total was 112,375, an increase of about 41 per cent.

A decrease is noted in the number of city water samples submitted during the period, which arises from the fact that the Department has been unable to collect samples through lack of funds. Of late the laboratory has been forced to rely for the performance of this service upon the supply boat which visits the cribs bi-weekly in good weather. Formerly, samples were collected by office employes of the Health Department in the morning before coming to work. This was abandoned because the samples were frequently improperly collected and because the trip to the less accessible pumping stations encroached too extensively upon the working hours of the employes. The collection of samples by the supply boat at the cribs has proven even less satisfactory, as might be expected, from the fact that the men are untrained and not under the jurisdiction of the laboratory or Health Department. Control tests have shown con-

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clusively that many samples are contaminated bacterially in collection, which no doubt accounts for the high percentage of colon contaminations reported during 1910 (13.8 per cent). The matter of proper sampling will never be satisfactorily adjusted until two men are available for the purpose; men who can be trained in the laboratory and who will be under direct control of the laboratory.

The reduction in the number of chemical milk examinations is due to the fact that the milk inspection department has turned its attention more particularly to sanitary inspection, and has, therefore, submitted fewer samples for chemical analysis. In the meanwhile, the efforts of the milk division of the laboratory have been turned to the bacteriologic examination of milk, of which 3,914 samples were examined in 1909 and 5,203 in 1910.

There has been a notable increase in the number of analyses requiring expert testimony in court. The most important among these was a case involving the charge of manslaughter. This case necessitated the immunization of rabbits for the identification of human blood stains by the precipitin test.

In connection with the examination for diagnosis of hydrophobia a marked increase in the number of specimens submitted is to be noted together with a striking decrease in the per cent of positive specimens found. This drop in the number of positives occurred coincident with a revision of the technique of examination for negri bodies and the introduction of routine guinea pig inoculation, which was undertaken early in the year 1910. The inference is probably correct that the high percentage of positives in previous years is attributable in part, at least, to faulty methods. Out of 105 dogs examined in 1910, five, or 4.7 per cent, were found positive.

In the report of the years 1907 and 1908 there is little worthy of note, other than the fact that the work upon ventilation was begun during this period. During the years 1909 and 1910 many new lines of investigation were undertaken, which with the exception of those which are discussed more fully elsewhere, are given below:

Results of a series of 271 chemical and bacteriologic examinations of Lake Michigan water along the north shore from Evanston to Waukegan, taken at distances of from four hundred feet to five miles from shore, indicate that the sewage contamination in this locality is at times a serious menace to public health. It is to be hoped that steps will be taken in the near future, either for the proper disposal of sewage, or for the establishment of filtration plants to supply the various towns between the two points mentioned.[1]

A series of fifty-seven analyses of Lake Michigan water in the neighborhood of the dumping area showed that there was serious contamination of the water during rough weather for distances as

[1] See Report of North Shore Sanitary Assn., 1910.

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far as a half mile outside of the dumping area. It was impractical in this series to obtain samples at greater distance from shore. In connection with this problem, studies were made of the relation existing between the turbidity and bacteriologic findings in the city water, with the result that instances of colon contamination and high bacterial content were found to bear a close relationship to high turbidities. Inasmuch as the turbidity in the dumping district was of the same general character as that found in the city water, and since the dumping area was at this time the nearest source of bacterial pollution of any consequence, the suspiciously close connection between the turbidity and colon contamination in the city water points to the dumpings as a probable source of such contamination.

An investigation[2] of raw market milk for the presence of tubercle bacilli gave the following results: Out of sixty-three samples examined in the city laboratory five caused the death of the animals injected, from acute tuberculosis. The bacilli were demonstrated in the tissues of the lung and liver.

Out of one hundred samples examined at the University of Chicago five were positive. In these, tubercle bacilli were demonstrated in smears from the tubercular areas. The results of the two laboratories are given below:

	No. Samples	All Animals Died in Three Weeks	Available for Series	Per Cent Found Tuberculous
Total	163	51	112	8.9
Raw	144	49	95	10.5
Pasteurized	19	2	17	0.

The condition of the raw market milk in Chicago, as shown by the 1,271 bacteriologic examinations in 1909 and 2,350 in 1910 is very unsatisfactory. The average number of bacteria per cubic centimeter in raw milk for 1909 was 5,547,502. The average for 1910 was 11,574,000 per cubic centimeter. During the summer months of 1910, June, July, August and September, the average number of bacteria per cubic centimeter reached 13,932,000.

The pasteurized milk sold in Chicago during 1909 and 1910 was not altogether satisfactory from the standpoint of bacterial count, but was in much better condition than the raw milk. Two thousand and seventy-one samples of pasteurized milk were examined during 1909. The results during the early part of the year are of doubtful statistical value for the reason that much of the milk sold at that time as pasteurized was in reality raw. The average bacterial count from August 1st to December 31st was 944,000 per cubic centimeter, and of 2,219 samples examined during 1910 the average was 1,702,000 per cubic centimeter.

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[2]See also "Tuberculosis in Market Milk of Chicago"—Tonney, Jour. A. M. A., Vol. LV, p. 1252.

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A series of 89 bacteriologic examinations of ice cream made during 1909 showed very high bacterial counts and the frequent presence of bacillus coli communis in one cubic centimeter of the sample. The lowest bacterial count was 20,000; the highest 125,000,000; the average 16,662,134.

During the year 1910, 386 samples of ice cream were examined bacteriologically and 87 unfrozen mixtures intended for use in making ice cream. The frozen product, as offered for sale, contained from less than 20,000 bacteria per cubic centimeter to over 100,000,000 per cubic centimeter; the average for the 386 samples was 15,401,000 per cubic centimeter. In view of the conditions revealed it would certainly be advisable to require that the ingredients be cooked or pasteurized immediately before the process of freezing. A limit of 5,000,000 bacteria per cubic centimeter was agreed upon by the Health Department and the Ice Cream Dealers' Association as a tentative standard. While we do not consider this a satisfactory permanent standard, it is perhaps the best obtainable in the present stage of development of municipal control.

A study of the relation of bacterial multiplication to acidity in raw and market pasteurized milk seemed to indicate that there is no essential difference in the behavior of the two products. The souring of the market pasteurized samples occurred from twelve to twenty-four hours later (in summer) than the raw samples collected at the same time, but developed the same amount of acidity as the raw samples. The laboratory-pasteurized samples failed to develop acidity, but coagulated while sweet to the taste, showing a rennet curd.[3]

Out of 54 samples of oysters examined during 1909, 28 were found to contain colon bacilli. Of 40 samples examined in 1910, there was but one from which colon bacilli could not be isolated. The number of colon bacilli found in the oyster liquor varied from 0 to 10,000 per cubic centimeter. Shell oysters gave much lower colon counts than those handled in bulk. The method used consisted in the inoculation into lactose bile fermentation tubes and subsequent isolation upon Endo's medium.

Examinations of urine, feces and water for typhoid bacilli, fourteen samples in all, were made during 1910. The method of procedure consisted of enrichment by passage through lactose bile fermentation tubes and subsequent isolation upon Endo media. Suspicious colonies were planted in broth and after twenty-four hours at thirty-seven degrees centigrade subjected to a macroscopic agglutination test, using high potency typhoid serum. In case a positive

[3] For full details see "Bacteriological Multiplication in Milk"—Evans-Tonney—Proc. of Ass'n of Amer. Med. Milk Com. St. Louis Meeting, June, 1910.

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agglutination was obtained in high dilutions, a few of the more important cultural characteristics were determined as a confirmatory measure. Three samples of urine and three of feces were found to contain typhoid bacilli. These were in persons engaged in the production and handling of milk.

Out of five specimens of blood from a neighboring dairy district, taken from cattle presenting symptoms suggestive of anthrax, three were found positive by examination of direct smears and by guinea pig inoculation.

A specimen of feces from a fatal case of diarrhea in an immigrant was examined for the presence of cholera spirilla with a negative result.

The work upon the subject of ventilation, begun in 1908, has continued up to the present time. The earlier tests of street cars resulted in the adoption of a minimum standard of four hundred cubic feet of air per person, per hour, or twenty-four thousand cubic feet of air per hour for a car holding sixty persons. This standard is adopted with the understanding that the air shall be introduced in the following manner: The intakes shall be located at or near the floor and shall be sufficient in number to provide even distribution. The cold air shall pass over or through the car heaters before entering the body of the car. The foul air shall be removed at or near the ceiling. A maximum of not more than ten parts of carbon dioxid shall be allowed. These standards have recently been embodied in an ordinance regulating the ventilation of cars in the City of Chicago. Other investigations have covered schools, lodging houses, five and ten cent theatres, laundries, workshops, bakeries, restaurants, offices, etc.

MUNICIPAL LABORATORY.

Summary of Examinations, Analyses and Investigations, etc., for the Years 1907 and 1908.

GENERAL SUMMARY	1907	1908
TOTAL EXAMINATIONS AND ANALYSES	76,682	88,324
Bacteriologic	9,041	15,658
Chemical	67,641	72,666
MATERIAL DISTRIBUTED:		
Vaccine—number of tubes	106,900	96,000
Antitoxin—number of vials	5,674	7,164
Antitoxin—number of units	13,839	20,000
Widal Test outfits	4,700	4,850
Diphtheria culture outfits	41,458	46,900
Tuberculin for diagnostic tests	.....	1,230
Tuberculin for ophthalmic test	.....	580
Tuberculin for hypodermic test	.....	650

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DIVISION OF BACTERIOLOGY.

	1907	1908
Total bacteriologic examinations	9,041	15,658
SUSPECTED DISEASES—TOTAL	6,436	11,012
Diphtheria—total specimens	3,170	5,750
Diphtheria—per cent times bacillus diphtheriæ found	23%	23%
Typhoid fever—total specimens	2,658	3,686
Typhoid fever—per cent giving positive reaction	23%	24%
Tuberculosis—total specimens	498	1,418
Tuberculosis—per cent times bacillus tuberculosis found	39%	27%
Hydrophobia—number dogs examined	10	40
Hydrophobia—per cent times hydrophobia proven	30%	25%
Other suspected disease specimens	20	118
WATER AND ICE EXAMINATIONS—TOTAL	2,112	39.0
Lake water, city supply number samples	1,422	2,000
Lake Water, per cent times found "unsafe"	5.5%	18.8%
Well waters, wells in city—number samples	.....	64
Well waters, " —per cent condemned as "unsafe"	.....	90.6%
Well waters diary farm wells—number samples	.....	846
Well waters, " —per cent condemned as "unsafe"	.....	70%
Lake and River waters (for Lake Michigan Water Commission), number samples	.....	111
Other water examinations—number	289	212
Ice—number samples	401	147
MISCELLANEOUS EXAMINATIONS—TOTAL	1,583	1,366
Food tests	480	363
Other examinations	1,103	1,003

DIVISION OF CHEMISTRY.

	1907	1908
Total analyses	67,641	72,666
WATER AND ICE ANALYSES—TOTAL	6,430	7,327
Lake water, city supply—number samples	1,694	2,161
Lake water—per cent times found "unsafe"	0.3%	2%
Well waters from dairy farms—number samples	.....	849
Well waters—per cent times found "unsafe"	.....	71%
Other waters and ice—number samples	4,736	4,317
MILK TESTS:		
Milk and cream samples tested	60,668	63,984
Milk and cream—per cent found below grade	7.4%	4.8%
Milk and cream—Miscellaneous analyses	543	1,355
Ventilation tests—total	.....	384
Air tests for dust, etc.—total	.....	12
Other tests	543	959

MUNICIPAL LABORATORY.

Summary of Examinations, Analyses and Investigations, etc., for the Years 1909 and 1910.

GENERAL SUMMARY	1909	1910
TOTAL EXAMINATIONS AND ANALYSES	85,864	112,375
Bacteriologic	40,717	66,711
Chemical	45,147	45,664
MATERIAL DISTRIBUTED:		
Vaccine—number of tubes	76,310	7,694
Antitoxin—number of vials	7 962	1,612
Antitoxin—number of thousand units	23,492	4,369
Diphtheria culture outfits	96,000	119,107
Widal test outfits	1,440	2,500
Tuberculin for diagnosis tests:		
Tuberculin for hypodermic test	500	252
Tuberculin for ophthalmic test	.....	4
Tuberculin for Von Pirquet test	.....	105

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DIVISION OF MEDICAL DIAGNOSIS.

	1909	1910
Total bacteriologic examinations	35,168	60,632
Diphtheria—total specimens	26,511	51,711
Diphtheria—per cent times bacillus diphtheriae found	22%	21%
Typhoid fever—total specimens	4,229	3,989
Typhoid fever—per cent giving positive reaction	20%	20.6%
Tuberculosis—total specimens	2,080	2,233
Tuberculosis—per cent times bacillus tuberculosis found	27%	22.3%
Hydrophobia—number dogs examined	16	105
Hydrophobia—per cent times hydrophobia proven	12%	4.7%
Examination of milk for tubercle bacilli	63	4
Oysters	54	40
Vaccine for purity	21	35
Suspect tubercular meats	15	80
Urines	1,154	2,170
Miscellaneous examinations (pus, malaria, food and misc.)	1,025	265

DIVISION OF WATER ANALYSIS.

	1909	1910
BACTERIOLOGIC:		
Total bacteriologic examinations	1,635	876
Lake water, city supply—number samples	788	315
Lake water—per cent times found "suspicious"	7 4%	13.86%
Well waters, wells in city—number samples	172	148
Well waters—per cent condemned as "unsafe" or "suspicious"	24%	43%
Lake and river waters (for Lake Michigan Water Commission) number samples	271	4
Other water examinations—number	280	114
Ice—number samples	124	197
Water for ice	.....	98
CHEMICAL:		
Total chemical analyses	1,685	814
Lake water, city supply—number samples	793	313
Other waters and ice—number samples	892	501

DIVISION OF MILK ANALYSIS.

	1909	1910
Routine bacteriologic examinations of milk and milk products	3,914	5,203
Routine chemical examinations	41,297	40,162
Per cent found below grade	4.3%	3.5%

DIVISION OF CHEMISTRY.

	1909	1910
Miscellaneous analyses—total	1,830	4,227
Foods	315	343
Drugs and medicines	37	16
Explosives	16	7
Toxicologic	73	43
Urines	834	2,902
Work for city departments (supplies, etc.)	59	54
Miscellaneous (smoke, stomach contents, special milks, etc)	422	217
Carbonated waters	.....	579
MEDICO-LEGAL ANALYSES—TOTAL	74	66
Blood stains	9	3
Police court cases	15	40
Morphin and cocain	50	23

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VENTILATION.

	1909	1910
Ventilation tests—Total	335	176
Analysis of air for CO_2	.....	275
Special outdoor temperature tests	.....	4
GENERAL:		
Theatres inspected	80	54
Reinspections	60	.....
Complied	65	.....
Suits	12	.....
Fines	5	.....
Costs	5	.....
Dismissed	2	.....
Bakeries and restaurants	20	44
Balconies	.....	6
Schools	3	8
Miscellaneous (wholesale houses, offices, stores, library, banks, etc.)	12	5
Car ventilation—Total	30	50
SMOKE AND DUST TESTS FOR SMOKE INSPECTOR:		
Analyses	32	.....

SPECIAL INVESTIGATIONS, 1909.

Total series of investigations	13
Total examinations	5,064

	Examinations
Investigation of sewage pollution on the North Shore from Evanston to Waukegan	271
Investigation of effect of the dumping of dredgings in Lake Michigan	57
Carbonated beverages for preservatives and saccharin	11
Investigation of systems of street car ventilation continued from previous year	27
Investigation of the conditions of ventilation in general in Chicago to establish standards and obtain data for ordinance	175
Investigation of Chicago's milk supply for the presence of tubercle bacilli (in collaboration with the University of Chicago and the Northwestern Medical School	206
Bacteriologic investigation of the condition of raw milk in Chicago	1,271
Bacteriologic investigation of the condition of pasteurized milk under the new ordinance	2,071
Bacteriologic investigation of ice cream	87
Bacteriologic investigation of certified milk	27
Oysters for sewage pollution	54
Study of multiplication of bacteria and relative acidities in raw and pasteurized milk	340
Investigation of efficiency of pasteurizing establishments newly installed	460

INNOVATIONS—NEW ROUTINE TESTS INTRODUCED DURING YEAR 1910

Pasteur treatment of rabies for charity cases, using the U. S. Public Health and Marine Hospital virus.

Revision of technique of diagnosis of rabies to include guinea pig inoculation.

Revision of technique Widal examination to include gravimetric estimation of dilution in preference to colorimetric method.

Diagnosis of syphilis in charity patients, using:—

(1) Dark field illuminator and India ink stain for demonstration of spirocheta pallida.

(2) Wasserman reaction.

Examination of urine and feces from suspect typhoid carriers.

Filtration test for visible dirt in milk.

Adoption of alkaline hypochlorite method of examining sputum for tuberculosis, with installation of sputum shaker and centrifuge.

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SPECIAL INVESTIGATIONS, 1910.

Total series of investigations	16
Total examinations	18,352
	Examinations
Investigation of carbonated beverages for lead	579
Investigation of the conditions of ventilation in public buildings, offices, etc., (continued)	117
Bacteriologic investigation of the condition of raw milk in Chicago (continued)	2,350
Bacteriologic investigation of the condition of pasteurized milk in Chicago (continued)	2,219
Series of tests to determine the multiplication of bacteria in pasteurized milk kept for 24 hours in pasteurizing plants under ordinary working conditions	105
Bacteriologic investigation of ice cream (continued)	463
Bacteriologic investigation of oysters for sewage pollution	40
Efficiency tests of pasteurizing plants (102 inspections)	562
Investigation of diphtheria carriers in the schools	6,468
Examination of urine and feces for typhoid bacilli in suspect carrier cases	14
Series of filtration tests for visible dirt in milk, samples collected at railroad depots and country shipping points	5,300
Series of toxicity tests of raw and pasteurized milk of varying degrees of staleness	53
Series of tests showing relative development of acidity in raw and pasteurized milk	118
Examination of canned goods for evidence of fermentation	25
Investigation of the status of the Widal test and revision of the technique used in the laboratory	.....
Investigation of the effect of freezing in purification of water in lakes used for cutting ice	130
Examination for bacillus "Koch" in case of suspect Asiatic cholera	1
Examination of blood for bacillus "anthracis" from dairy herds supplying the Chicago market	8

DIPHTHERIA CARRIERS IN SCHOOLS.

Of 6,468 school children examined during the year 1910, most of which were cultured during the diphtheria epidemic of November and December, 744 or 11.96 per cent were at the time of culturing non-sick carriers of morphologically typical Klebs-Loeffler bacilli. Just what per cent of these cases subsequently developed symptoms of diphtheria cannot be determined with any degree of accuracy.

All schoolrooms in which one or more clinical cases of diphtheria developed were subjected to examination. It will be seen from the accompanying table that the per cent of carriers in schoolrooms under epidemic conditions presents all degrees of variation, but far outstrips the usual one or two per cent ordinarily found in the absence of epidemics. The largest number of positives found in a single room was twenty-two, including the teacher, out of 25 persons. Referred to a percentage basis, this represents eighty-eight per cent of those in attendance. Of the 774 cases which were positive upon the first culture, 46.9 per cent were negative in five days when the second culture was taken; 81.2 per cent were negative within ten days; 97.1 per cent were negative within three weeks and 99.6 per cent were negative in thirty days; 0.36 per cent were prolonged beyond five weeks. The longest duration of a single case was six weeks. The average time in which the bacilli disappeared from the throat was 8.23 days.

All positive cases were sent home from school and placed in quarantine, which, for administrative reasons, was made somewhat less rigid than that of a clinical case. A placard marked "Diphtheria

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Carrier Here" differing in color and appearance from the regulation diphtheria placard was posted on the premises. The fact that quarantine was lifted as soon as one negative throat culture was obtained and that the larger percentage of carrier cases is of short duration tends to lessen the opposition which is met with in maintaining quarantine upon a non-sick case. The effectiveness of the control of diphtheria by isolation of carrier cases may be judged from the fact that after about five weeks of work along the lines indicated, the epidemic was effectually stamped out.

DIPHTHERIA CARRIERS IN SCHOOLS.

Results of examinations of cultures made from throats of pupils in schools—enumerating only those rooms in which twenty or more cultures were taken.

No. Pupils in Room	No. of Positives	Per Cent Positive	No. Pupils in Room	No. of Positives	Per Cent Positive	No. Pupils in Room	No. of Positives	Per Cent Positive
42	2	4.8	20	2	10	37	8	21.6
40	8	20	45	7	15	62	8	12.9
30	1	3.3	41	9	22	51	17	33.3
53	5	9.4	47	7	15	58	14	24.1
23	6	2.6	47	13	27	25	3	12.
35	7	20	35	7	20	22	0	0
36	1	2.8	22	1	4.5	45	14	31.1
36	6	16.3	29	12	41.4	21	1	4.8
51	2	4	53	3	5.6	33	3	9
44	3	7	28	1	3.6	20	1	5
46	4	9	29	2	6.9	42	4	9.5
35	0	0	24	1	4.2	107	0	0
44	0	0	33	2	6	42	13	31
46	2	4.3	44	2	4.5	26	2	7.7
40	0	0	46	2	4.3	37	4	10.8
28	9	9	25	3	12	23	5	21.7
30	0	0	21	2	10	22	0	0
60	2	3.3	23	1	4 4	20	2	10
56	6	10.7	45	7	15.5	21	4	19
52	0	0	43	3	7	52	28	53.8
69	5	7	35	5	14	30	3	10
27	0	0	25	0	0	29	1	3.4
55	0	0	35	12	34	48	4	8.3
24	3	12.5	38	5	13	34	1	2.9
39	1	2.6	24	4	16	32	12	37.5
45	2	4.4	45	6	13.3	29	1	3.4
46	2	4.4	45	7	15.5	58	6	10.4
22	2	9.1	71	4	5.6	36	5	13.9
52	1	2	30	4	13.3	38	12	31.6
44	3	7	37	0	0	25	22	88
35	0	0	37	3	8.1	60	7	11.6
33	1	3	24	3	12.5	35	5	14.3
30	0	0	36	5	14	45	6	13.3
40	4	10	33	7	21	41	8	19.5
53	17	32	28	7	25	38	12	31.6
30	5	16.6	45	0	0	21	6	28.5
43	8	19	48	5	10.4	37	7	19
68	2	3	41	2	4.9	28	3	10.7
38	2	5.2	23	5	21.7	41	1	2.4
45	4	9	42	2	4.8	32	10	31.2
45	0	0	32	9	28	77	8	10.4
21	1	5	40	8	20	40	11	27.5
36	1	2.6	23	0	0	27	2	7.4
50	6	12	53	5	9.5	21	7	33.3
49	1	2	28	3	10.7	68	17	25
32	2	6.3	20	0	0	45	6	13.3
34	6	17	27	1	3.6	28	0	0
21	7	33.3	32	8	25			

Total number of cultures taken in schools during 1910 (including groups of less than 20 not tabulated above)..... 6,468
Number found positive of diphtheria..... 774
Per cent positive..... 11.96

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DIPHTHERIA CULTURE OUTFIT.

The diphtheria culture outfit here described has been in use in the laboratory for a number of years and has been described in a previous publication of the Department. Nevertheless, it possesses, in our judgment, certain advantages which commend it strongly for municipal work and which are sufficient to justify repetition.

The outfit consists of a ¼ ounce aluminum salve box, containing the culture medium; a small sealed envelope 1¼ x 6 inches, containing a wooden swab and tongue depressor and a record card; all of which are enclosed in an envelope of tough paper, 4 x 6 inches, which fastens with a soft metal clasp. The aluminum culture box is protected against drying and recontamination by means of a wide rubber band, which covers the slit between the cover and the body of the box.

The preparation of the culture medium is carried out as follows: Beef blood collected from the abattoirs is allowed to stand for about forty-eight hours in a cool place until the serum is well separated. A mixture consisting of one part of broth containing one per cent dextrose and one per cent peptone, to which are added three parts of the serum, is prepared and run into the culture boxes by means of a separatory funnel. The sterilization is most satisfactorily done by the fractional method in a water jacketed copper or galvanized iron sterilizer of an inside diameter not greater than 10 x 10 x 8 inches, containing removable perforated metal shelves upon which the boxes can be placed in tiers three high. The hardening is accomplished by heating to 75 to 85 degrees centigrade for one hour, the mean and extreme shelves being removed and interchanged once during the process, since the temperature in the center of the chamber is somewhat lower than that at the periphery.

The temperature is then raised rapidly to 100 degrees centigrade and maintained for two hours. On the second day the sterilization is continued for two hours, the shelves being interchanged at the end of the first hour, after which rubber bands are put around the boxes. Another sterilization of two hours on the third day completes the process. From twenty to thirty boxes are now selected indiscriminately from the lot and incubated for forty-eight hours at 37 degrees centigrade. If there is no contamination found among these, the lot is passed as ready for use.

It is also possible, in case it is necessary to save time, to sterilize the culture boxes in the autoclav, but the results by this method are somewhat less satisfactory because of the collection of condensation water in the boxes, which favors subsequent contamination of the medium. This contamination apparently occurs by direct growth of germ life from the outside through the nutrient fluid as it seeps from under the cover.

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The method of sterilization in the autoclav is carried out in the following manner: Place the boxes, which have been previously hardened in the jacketed sterilizer, in the autoclav, leaving the exhaust cock open. Heat rapidly until the steam first makes it appearance at the stopcock. Now turn the flame down to a pin point and gradually increase the heat until a slow, steady jet of steam flows from the cock. It should require about one hour to bring the temperature to this point. The stopcock is now closed and the temperature increased at the rate of 1 degree Fahrenheit every two minutes up to 250 degrees Fahrenheit, or fifteen pounds pressure. Maintain this pressure for thirty minutes. Then by lowering the flame, reduce the temperature at the rate of 1 degree Fahrenheit every two minutes to 212 degrees Fahrenheit. Then shut off the gas completely. Wait ten to fifteen minutes before opening the steam cock, after which time the autoclav may be opened and the boxes removed. It is very essential that the sterilizing apparatus be watched closely during the entire process which consumes altogether about four to four and one-half hours. All changes in temperature and pressure must be made very gradually.

The swab and tongue depressor are sterilized in sealed envelopes for one-half hour at 120 degrees centigrade. To avoid soaking the mucilage of the envelopes with condensation water, the autoclav is heated to steaming before the material is placed within it.

Some of the advantages of the outfit are:

1. That it is not easily breakable.
2. That it offers a maximum surface for smearing.
3. That it is well adapted to the making of "impression" smears for diagnosis after six hours incubation. This method of smearing is impossible from the test tube cultures.
4. That it is not expensive.

The fact that it is not mailable under the present postal regulations is a disadvantage from the standpoint of the state laboratory, but is not important from the standpoint of municipal health work.

A statement of the cost of each item is given below:

Large printed envelope 4 in. x 6 in....	$ 4.10	per M.	in lots of	20,000
Small printed envelope 4¼ x 6 in.....	2.15	"	"	"	"
Aluminum boxes	3.00	"	"	"	"
Printed report cards	1.55	"	"	"	"
Wooden tongue depressors.....	1.00	"	"	"	"
Meat skewers (for swab).....	.34	"	"	"	"
Blood from abattoir.....	.02 for 1,000 boxes				
Complete cost	$22.66 per M.				

The Widal Test.

During the early part of 1910, a circular letter was sent to municipal and State laboratories in the United States and Canada with the object of developing a standard Widal test technique, which would be based upon the common experience and practice of labora-

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tories engaged in public health work. The circular was intended more especially to reach those laboratories which receive dried blood for the test. From the large number of replies received, it appears that there is much variation in the detail of the test as it is commonly carried out, although as to certain essentials there is practical agreement among the majority of workers. From the above study and also from an extensive review of the literature and a certain amount of practical experimentation in this laboratory, the following technique has been elaborated:

Dilution used—1 to 20 and 1 to 50 of whole blood.

Time of incubation—one hour.

Temperature of incubation—room temperature.

Culture—Twenty-four hour old agar slant or a 24 hour bouillon culture transferred from a stock agar slant less than one month old.

Controls—Both positive and negative with each set of tests.

Interpretation—(Dilutions determined by weight). The figures given below are those which are found satisfactory with a selected culture of typhoid bacilli, which is now in use in this laboratory. To a certain extent, the figures given will vary according to the strain of organism used.

Positive—Complete agglutination; one per cent motility allowed, exclusive of Brownian movement.

Negative—Complete absence of agglutination up to five per cent agglutination.

Atypical—Five per cent agglutination up to ninety-nine per cent agglutination. (When the dilutions are made by weight very few tests fall into this class).

Method of Dilution: Gravimetric: This method is preferable to the colorimetric and should be used in all cases in which a sufficient amount of dried blood is obtainable. One milligram of the dried blood is weighed accurately upon an assay balance and transferred to a small three inch test tube. .08 cubic centimeter of normal saline solution is now introduced by means of a small graduated burette, described by F. F. Wesbrook.[4] Figuring dried blood as representing one-fourth the weight of whole blood, this represents a dilution of 1 in 20 of whole blood. Remove a platinum loopful of this solution and prepare the emulsion using a twenty-four hour agar slant. Now add .12 cubic centimeter more of the saline solution to the test tube. This gives a dilution of 1 in 50, approximately, of whole blood.

Colorimetric: This method should be used only upon specimens which are submitted in such condition as to preclude the possibility of weighing, e.g., too small in amount, or upon blotting paper, cotton, prescription blanks, etc. The dried blood is moistened by means of

[4]Journal of Infectious Diseases, Supplement No. 1—May, 1905, p. 316.

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a loopful of bouillon culture or of normal saline and rubbed with a platinum loop until a sufficient amount has been dissolved to match the color of a standard representing a definite dilution. As it is commonly practiced the method represents little more than a guess at the dilution, and in reporting results it should be understood that the laboratory does not accept the responsibility for the reliability of the findings, unless a sufficient amount of blood is submitted, e.g., four or five drops properly dried and free from extraneous matter. A statement to this effect should be stamped upon the report cards in all cases in which the specimens are improperly submitted.

Outfit: The outfit should consist of a thin sheet of aluminum foil 2 x 3 inches, with a report card and return envelope. In formulating instructions for collection of the specimen, it should be emphasized that it is necessary to allow the blood to dry thoroughly before folding the aluminum foil.

Sputum Examination.

Alkaline Sodium Hypochlorite Method for Demonstration of Tubercle Bacilli.

The following method of sputum examination has been in use in the Laboratory since May, 1910.

Apparatus and Solutions needed:

One sputum shaker—Boston Board of Health type.

One Babcock centrifuge carrying square trunnion cups to fit the same size bottle as is used in the shaker.

Alkaline sodium hypochlorite solution, also called antiformin.[5]

Ligroin—specific gravity .715 to .72.

For safety in handling, the sputum is sterilized in an Arnold sterilizer for fifteen minutes. This process does not affect the morphology of the tubercle bacillus, unless the heating is continued too long.

1.—Mix equal quantities of sputum and alkaline sodium hypochlorite solution in a sputum bottle of about 15 cubic centimeters capacity selected to fit the sputum shaker. Do not fill the bottle more than two-thirds full, as a full bottle cannot be shaken satisfactorily. Add 1 cubic centimeter of ligroin.

2.—Place the bottle in the sputum shaker and shake for twenty minutes.

3.—Transfer the bottle to the centrifuge and spin for twenty to thirty minutes. The mixture is now seen to be separated into three portions, an upper layer of ligroin, a lower layer of alkaline solution and a middle film or pellicle, which contains the tubercle bacilli.

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4.—Remove a portion of the film by means of a platinum loop and smear it upon a glass slide.

5.—Dry in air and fix by passing through a flame.

6.—Wash by dipping the slide into a beaker of water to remove the excess alkali. Stain as usual and examine.

Note: In decolorizing it should be remembered that the bacilli are present in a thin smear unprotected by mucous or cellular debris. Some of the stronger decolorizing mixtures act too vigorously and may decolorize the tubercle bacilli. A one per cent solution of hydrochloric acid in 95 per cent alcohol has proven satisfactory in the experience of this laboratory.

[5]*Preparation of Alkaline Sodium Hypochlorite Solution.* Use the contents of three boxes of commercial chlorid of lime. For each 90 grams use 65 grams of sodium carbonate. Mix the lime with 500 cubic centimeters of water to make a mush, and dissolve the soda in 2,000 cubic centimeters of water, using heat if necessary. Pour the lime emulsion into the soda solution and allow to stand for forty-eight hours. Decant off the clear liquid, filter if necessary, and test for available chlorin. This should be about twelve to fourteen per cent. Now dilute the solution to about five or six per cent available chlorin. To this solution add 75 grams of sodium hydroxid for each liter.

Store in dark colored bottles and keep in a dark place.

Lead in Carbonated Waters.

On July 21, 1910, a physician submitted samples of soda water for analysis, claiming that the beverage contained lead sufficient to cause poisoning of one of his patients. Analysis showed .3 grain of lead per U. S. gallon present.

Inspectors were sent to the bottling works where samples submitted by the physician had been manufactured and additional samples were taken. Seventy-two other bottling plants were inspected during the period from July 21 to October 13, 1910, as well as fifty-two small carbonating machines in the various department stores, hotels and ice cream parlors. The inspectors took 579 samples of carbonated water of which 230 contained lead in amounts ranging from .25 to .8 grain per U. S. gallon.

Samples of water were taken at various points in the bottling plants. The water entering the premises, the water after filtration, the water entering the carbonator and the water leaving the carbonator were all analyzed. All metal parts coming in contact with the charged water were tested. Experiments were conducted with bottles provided with lead button stoppers commonly known as spring or Hutchinson stoppers. These bottles were filled with lead-

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free carbonated water and left standing eight hours. The water was then analyzed and found to contain lead in amounts ranging from 1/40 to .4 grain per U. S. gallon.

The results of the analyses made during the period from July 21 to October 13 clearly established the following facts:

1. Carbonated water will readily dissolve lead.

2. The carbonator itself contributes practically no lead to the charged water provided a hard solder is used. Even if a soft solder is used, the amount of lead dissolved by the carbonated water is small. The machine should however be thoroughly flushed out every morning before use as the residual charged water left in the machine over night will dissolve considerable amounts of lead.

3. The lead button stopper is the chief source of lead in carbonated waters. The use of lead in these stoppers should be prohibited, and block tin or porcelain should be used.

4. The use of lead pipes to connect the carbonator with the filling devices constitutes a source of lead contamination and should be prohibited. Block-tin pipes should be used.

5. Lead shot used for cleaning bottles does not contribute lead to the charged water. There is a possibility that particles of lead might become lodged in the spring stopper and be dissolved in the carbonator. The use of lead shot to clean spring stoppered bottles should be discontinued and steel shot used.

The method used to determine the amount of lead in carbonated water is as follows:

A standard solution is made by dissolving .2743 gram of pure lead nitrate in water to make one liter of solution. One cubic centimeter of this standard solution is placed in a Nessler cylinder and distilled water added until the cylinder contains one hundred cubic centimeters. This cylinder then contains water whose lead content is .1 grain per U. S. gallon. Standards containing .2, .3, .4 and .5 grain per U. S. gallon are made by using 2, 3, 4 and 5 cubic centimeters of stock solution and diluting to 100 cubic centimeters in Nessler cylinders. These are carefully labeled as to strength.

The waters to be tested for lead are then placed in Nessler cylinders using 100 cubic centimeters as in the standards. To each cylinder add 5 drops glacial acetic acid and 5 cubic centimeters of freshly prepared saturated hydrogen sulphid water. The contents of the tubes are then carefully mixed and let stand five minutes. If lead is present, the liquid turns brown; and the more the lead, the deeper the color.

The color of the sample in question is compared with the colors developed in the standard tubes and a standard is selected which exactly matches the color in the sample. The amount of lead in the sample is equal to the amount of lead in the standard.

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Should copper be present, add one cubic centimeter of 50 per cent potassium cyanid solution. This prevents the formation of copper sulphid which would interfere with the estimation of lead. It is advisable always to add this reagent. A blank determination, using distilled water and all the reagents as in a regular test, should be made to establish the absence of lead in the reagents.

Ice Analysis.

During the ice cutting season of 1910, inspectors were sent to twenty-nine lakes and streams used by ice dealers as sources of ice supply for the Chicago market. Samples of water, collected while the ice cutting was in progress, were submitted to the laboratory for analysis. Later samples of ice from the same sources were collected after shipment to the city. The results of analysis of the water samples and of the corresponding ice samples are grouped together in the accompanying table, which presents an interesting study of the purifying effect of freezing under natural conditions. The reduction of the soluble chemical elements, both organic and inorganic, is striking in all instances. The total bacterial content shows a general reduction in the number of bacteria per cubic centimeter, although this factor is somewhat obscured by the fact that contamination from miscellaneous sources is apt to occur during storage and shipment. The number of positive colon findings is so small in both waters and ices as to be of little value in judging the efficiency of elimination of the colon bacillus by freezing, although in the case of Calumet Lake such elimination is apparent.

The findings confirm those of Sedgwick, Jordan, Sparks and other experimenters. From a study of the results, it becomes apparent that the efficiency of natural freezing, as a means of water purification compares favorably with that of the best modern mechanical filters. This view is now quite generally held among those who have made a study of the subject. It appears, therefore, that much of the effort spent up to the present time in ice inspection and ice analysis has been fruitless or at least could be more profitably turned into other channels. This does not mean, in our judgment, that ice inspection should be entirely abandoned, or that ice cutting should be permitted in grossly polluted streams, such as the Chicago Drainage Channel or Calumet River, especially since purer sources of supply are readily available.

It should not be forgotten that ice may be subjected to contamination by contact with filth as a result of unclean methods of handling. Contamination of this sort, occurring shortly or immediately before consumption, is probably of more importance from the standpoint of the consumer than is the more remote contamination of the stream from which the ice is obtained.

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Examinations of Chicago's Ice Supply.

Water samples collected from lakes and streams while ice was being harvested.— Ice samples collected in Chicago.— Note that water and ice analyses of given sources are compared.

Sample Number	Source	Free Ammonia	Albuminoid Ammonia	Nitrates	Nitrites	Chlorin	Oxygen Consumed	Count on Gelatin at 20°	Acid Colonies at 37° on Litmus Lactose Agar	Coli Present
Water 47	Benedict Lake, Wis.	.140	.140	0	0	2.	4.80	43	0	No
Ice 397	" " "	.08	.03	0	0	1.0	1.10	122	0	No
Water 16	Brown's Lake, Wis.	.260	.340	0	0	2.0	6.3	4	0	No
Ice 178	" " "	.05	.01	0	.001	1.0	.20	3	0	No
Ice 273	" " "	.02	.04	0	0	1.0	1.30	16	0	No
Ice 312	" " "	.03	.05	0	0	0	.90	21	0	No
Ice 708	Taken from car in Chicago.	.01	.03	No test	0	.2	.10	2400	0	No
Ice 774	Brown's Lake, Wis.	.02	.02	0	0	0	1.20	580	0	No
Ice 790	" " "	.01	.02	0	0	0	.70	24	0	No
Ice 791	" " "	.01	.02	0	0	0	.60	184	0	No
Ice 811	" " "	.00	.01	0	0	0	.10	.62	0	No
Water 14	Calumet Lake, Ill.	.18	.36	.70	.002	13.0	5.60	12000	0	Yes
Water 15	" " "	.35	.32	.70	.002	13.0	7.00	16000	0	Yes
Ice 201	" " "	.02	.01	0	0	1.0	.20	142	0	No
Ice 638	" " "	.01	.00	0	0	0	.10	830	0	No
Ice 701	" " "	.01	.02	0	0	.5	.20	1.660	0	No
Water 32	Camp Lake, Wis.	.32	.24	0	0	4.0	9.00	70	0	No
Water 34	" " "	.34	.24	0	.001	5.0	8.70	80	0	No
Ice 373	" " "	.09	.01	0	0	0	.50	29	0	No
Ice 728	" " "	.03	.03	0	0	.10	.70	120	0	No
Ice 763	" " "	.03	.05	0	0	0	1.00	212	0	No
Ice 786	" " "	.00	.04	0	0	1.0	1.00	146	0	No
Ice 796	" " "	.02	.02	0	0	1.0	.10	156	0	No
Water 865	Cedar Lake, Ind.	.200	.600	0	0	3.0	8.50	102	0	Susp.
Water 864	" " "	.200	.600	0	0	17.0	7.0	305	0	No
Ice 444	" " "	.00	.05	0	0	2.0	1.20	420	0	No
Ice 658	" " "	.04	.05	0	0	2 0	.90	55	0	No
Ice 668	" " "	.02	.03	0	0	1.0	.80	127	0	No
Ice 813	" " "	.01	.04	0	0	0	.40	480	5	No
Water 18	Channel Lake, Ill.	.160	.340	0	0	2.0	7.1	40	0	No
Ice 170	" " "	.02	.02	0	.001	0	1.60	3	0	No

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EXAMINATIONS OF CHICAGO'S ICE SUPPLY.—*Continued.*

SAMPLE NUMBER	SOURCE	Free Ammonia	Albuminoid Ammonia	Nitrates	Nitrites	Chlorine	Oxygen Consumed	Count on Gelatin at 20°	Acid Colonies at 37° on Litmus Lactose Agar	Coli Present
Ice 729	Channel Lake, Ill.	.03	.05	0	0	.3	.0	7	2	No
Water 153	Chicago River	.32	.30	.100	0	12.0	6.70	280	2	Yes
Ice 159	" "	.08	.09	0	0	1.0	1.30	40	1	Yes
Water 102	(Chicago Lawn Brick Yard)	.100	.200	0	0	5.0	4.6	4600	6	Susp.
Ice 101	" " " " "	.01	.02	0	0	5.	1.6	27	0	No
Ice 191	" " " " "	.01	.01	0	.001	0	.36	5	0	No
Water 876	Crystal Lake, Ill.	.03	.140	0	0	2.	5.80	20	0	No
Ice 179	" " "	.01	.02	0	0	0	.30	4	0	No
Ice 185	" " "	.01	.03	0	0	0	.30	0	0	No
Ice 738	" " "	.03	.05	0	0	0	.30	150	4	No
Water 875	Duck Lake, Ill.	.320	.400	0	0	3.0	13.10	85	0	No
Ice 657	" " "	.02	.02	0	0	2.0	.50	460	0	No
Water 64	Lake Elizabeth, Wis.	.03	.18	0	0	5.0	4.9	.200	0	No
Water 65	" " "	.03	.18	0	0	5.0	4.9	.155	0	No
Ice 175	" " "	.03	.05	0	.002	2.0	1.0	3	0	No
Ice 181	" " "	.00	.03	0	0	1.0	.70	5	0	No
Ice 184	" " "	.00	.02	0	0	1.0	.50	49	0	Yes
Ice 280	" " "	.01	.03	0	0	1.0	.60	36	0	No
Ice 504	" " "	.02	.09	No test	0	1.0	1.10	18	0	No
Ice 667	" " "	.02	.04	No test	No test	1.0	.50	214	0	No
Ice 715	" " "	.00	.02	0	0	.2	.20	200	3	No
Ice 736	" " "	.03	.03	0	0	0	.30	60	0	No
Ice 745	" " "	.00	.03	0	0	0	.60	95	0	No
Water 871	Fox Lake, Ill.	.200	.160	.25	.002	3 0	8.50	46	0	No
Ice 204	" " "	.05	.02	0	.001	0	.40	42	0	No
Ice 266	" " "	.0	.0	0	.001	1.0	.10	12	0	No
Ice 390	" " "	.02	.03	0	.001	0	.20	43	0	No
Water 28	Hooker Lake, Wis.	.160	.280	0	0	6.0	7.70	68	0	No
Ice 117	" " "	.02	.02	0	0	1.0	1.0	140	0	No
Ice 704	" " "	.02	.05	.10	0	.2	.50	880	0	No
Ice 802	" " "	.03	.03	0	0	0	1.20	460	1	No
Water 11	Lake Villa, Ill.	.100	.360	.10	0	2 0	6 4	5	0	No
Ice 188	" " "	.0	.02	0	0	1 0	.20	2	0	No
Ice 189	" " "	.0	.03	0	.001	1.0	.30	2	0	No
Ice 707	" " "	.01	.05	No test	0	.5	.10	57	0	No

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EXAMINATIONS OF CHICAGO'S ICE SUPPLY.—*Continued.*

SAMPLE NUMBER	SOURCE	Free Ammonia	Albuminoid Ammonia	Nitrates	Nitrites	Chlorine	Oxygen Consumed	Count on Gelatin at 20°	Acid Colonies at 37° on Litmus Lactose Agar	Coli Present
Ice 810	Lake Villa, Ill.	.02	.01	0	0	0	.20	280	0	No
Ice 816	" " "	.02	.02	0	0	0	.40	108	0	No
Water 54	East Loon Lake, Ill.	.120	.46	.00	0	4.5	6.70	800	0	No
Ice 795	" " " "	.02	.02	0	0	0	.60	45	0	No
Ice 798	" " " "	.03	.02	0	0	1.0	.20	24	0	No
Water 12	West Loon Lake	.100	.300	0	0	1.0	5.8	8	0	No
Ice 272	" " "	.000	.02	0	0	0	.80	11	0	No
Water 872	Long Lake, Ill.	.200	.250	.200	.001	2.0	11.0	40	0	Susp.
Ice 676	" " "	.03	.00	0	0	.0	.1	320	0	No
Ice 684	" " "	.02	.01	0	0	1.0	.20	31	0	No
Ice 798	" " "	.02	.05	0	0	5	.70	920	0	No
Water 25	Lulu Lake, Wis.	.07	.220	.10	0	3.0	5.90	28	0	No
Ice 332	" " "	.04	.01	0	0	0	.80	16	0	No
Ice 465	" " "	.03	.01	0	0	0	.10	7	0	No
Water 19	Lake Marie, Wis.	.160	.240	0	0	3.0	7 2	28	0	No
Water 63	" " "	.050	.160	0	0	7.0	4.3	308	10	Yes
Ice 177	" " "	.03	.03	0	0	2.0	.5	3	0	No
Ice 237	" " "	.01	.02	0	0	.0	.4	2	0	No
Ice 696	" " "	.01	.01	0	0	1.0	.30	83	0	No
Ice 717	" " "	.03	.01	0	0	.5	.10	120	0	No
Water 27	Paddock Lake, Wis.	.08	.20	0	0	2 0	6.60	48	0	No
Ice 180	" " "	.02	.08	0	0	0	.50	27	0	No
Ice 741	" " "	.01	03	No test	0	0	.20	200	1	No
Water 10	Pewaukee, Wis.	.120	.32	0	0	2.0	6.70	5	0	No
Ice 197	" "	.01	.01	0	0	0	.40	22	0	No
Water 48	Powers Lake, Wis.	.05	.18	0	0	4.0	4.70	73	0	No
Ice 187	" " "	.00	.01	0	0	0	.10	2	0	No
Water 59	Randan Lake, Wis.	.40	.40	0	0	5 0	7.20	300	0	No
Water 213	" " "	.04	.01	0	0	1.0	.30	13	0	No
Ice 223	" " "	.02	.04	0	0	0	.80	36	0	No
Water 15a	Lake Rockland, Wis.	.480	.400	0	0	2.0	7.5	46	0	No
Ice 208	" " "	.05	.01	0	.001	1.0	.3	10	0	No
Ice 212	" " "	.06	.01	0	.001	1.0	.3	10	0	No
Water 24	Silver Lake, Wis.	.14	.23	.05	0	4 0	6.80	16	0	No
Water 23	" " "	.15	.23	.00	0	3.0	6.40	14	0	No

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EXAMINATIONS OF CHICAGO'S ICE SUPPLY.—*Continued.*

SAMPLE NUMBER	SOURCE	Free Ammonia	Albuminoid Ammonia	Nitrates	Nitrites	Chlorine	Oxygen Consumed	Count on Gelatin at 20°	Acid Colonies at 37° on Litmus Lactose Agar	Coli Present
Water 24	Silver Lake, Wis.	.14	.22	.10	0	3.0	6.50	7	0	No
Ice 377	" " "	.05	.05	0	0	1.0	.80	40	0	No
Ice 672	" " "	.02	.02	0	0	2 0	.10	120	0	No
Ice 678	" " "	.02	.04	0	0	1.0	.50	28	0	No
Water 115	Taylor's Lake, Ill.	.150	.26	.05	0	4 0	5.90	340	0	No
Ice 693	" " "	.02	.02	0	0	0	.20	174	3	Yes
Ice 712	" " "	.00	.02	0	0	.1	.30	8	0	No
Ice 714	" " "	.01	.05	0	0	.5	.20	8	0	No
Ice 807	" " "	.01	.02	0	0	1.0	.40	8	0	No
Water 35	White River, Burlington, Wis.	.07	.110	0	0	2.0	2.90	10006	0	No
Ice 216	" " " "	0	0	0	0	0	.10	10	0	No
Water 36	Wingra Lake, Wis.	.220	.20	0	0	1.0	7.6	2300	0	No
Ice 410	" " "	.01	.01	0	0	0	2	5	0	No
Water 100	Wolf Lake, Ill.	1.00	2.20	0	0	9.0	5 0	1080	0	No
Ice 99	" " "	.02	.01	0	.001	2.0	1.2	427	0	No
Ice 183	" " "	.00	.00	0	0	0	.20	3	0	No
Ice 217	" " "	.01	.01	0	0	0	0	12	0	No
Ice 643	" " "	.01	.03	0	0	1.0	.60	241	0	No
Ice 651	" " "	.04	.02	0	0	0	.20	36	1	No
Ice 652	" " "	.02	.02	0	0	1.0	.30	370	0	No
Ice 653	" " "	.02	.03	0	0	1.0	.20	62	0	No
Ice 654	" " "	.03	.03	0	0	1.0	.30	84	0	No
Ice 662	" " "	.03	.02	0	0	0	.30	26	0	No
Ice 685	" " "	.02	.04	0	0	1 0	.80	67	0	No
Ice 697	" " "	.00	.00	0	0	0	.10	270	1	No
Ice 706	" " "	.01	.01	0	0	1.0	.40	300	0	No
Ice 716	" " "	.01	.02	0	0	.2	.30	160	4	Yes
Ice 755	" " "	.01	.04	0	0	1 0	.80	166	0	No

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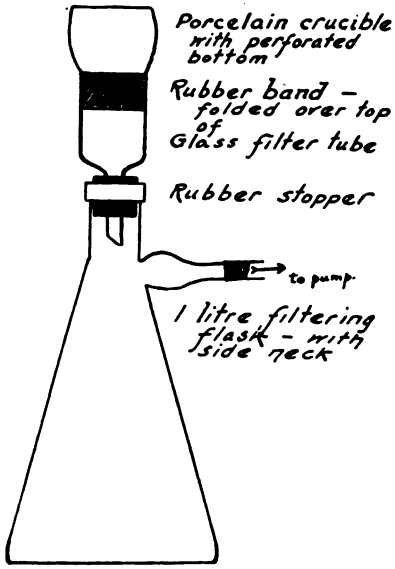
Filtration Test for Visible Dirt in Milk.

The apparatus shown in the accompanying cut is employed. It consists of a one liter flask fitted with a single perforated rubber stopper, a Gooch funnel and a porcelain Gooch crucible. The apparatus is set up in the usual way for filtration by the Gooch method and connected to a filter pump by means of a piece of pressure tubing.

For filtering material a very thin disk of absorbent cotton is used, which is prepared as follows: Wash and dry the fingers thoroughly and draw a small tuft of absorbent cotton from the roll, spreading it smoothly over the index finger and stretching it to the


Porcelain crucible with perforated bottom
Rubber band — folded over top of Glass filter tube
Rubber stopper
to pump
1 litre filtering flask — with side neck

APPARATUS FOR FILTRATION TEST.

degree of thinness desired. Now dip the cotton, held between the thumb and index finger, into a beaker of clean water. Shape the cotton film to the form of the disk by folding the edges under. Next introduce the disk into the Gooch crucible and pack it in place with wet fingers. It is essential that the disk be thin; otherwise, the rate of fitration will be slow. At the same time it is important that all of the perforations in the bottom of the crucible be covered.

A pint of milk is now shaken thoroughly and poured slowly into the crucible. The bottle must be frequently agitated during the pouring in order to keep the dirt in suspension. If the cotton film is sufficiently thin and the filter pump efficient, the milk runs through very rapidly. The cotton disk is now removed by means of a small

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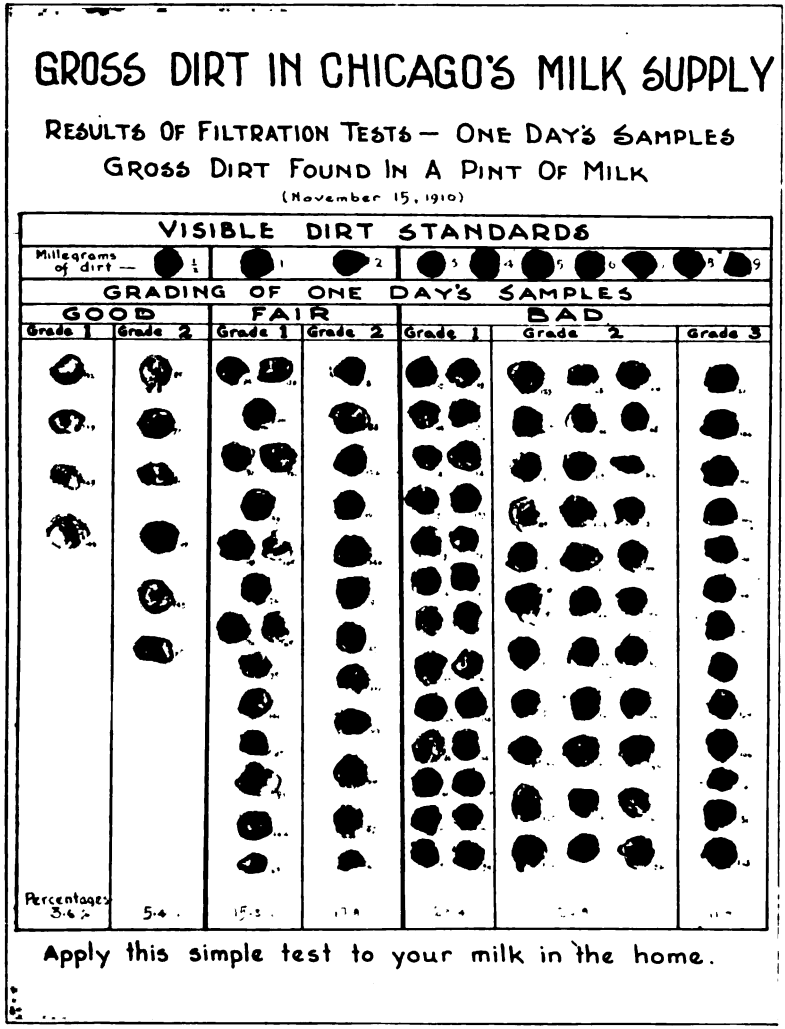
pair of pincers and attached by means of a drop of mucilage upon a report blank opposite the name of the farmer or shipper from whom the sample was collected. It is then allowed to dry at room temperature.



The finished product is a glazed surface of transparent mucilage through which the cotton disk, carrying its collection of dirt, may be clearly seen. The glaze of mucilage protects against subsequent soiling.

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Dirt Standards.—Standards for a rough quantitative estimation of the amount of dirt present in milk samples are prepared in the following manner:

A small quantity of manure from a cow stable is dried at 100 degrees centigrade, thoroughly ground in a mortar and passed through a 100-mesh sieve. One gram of this powder is added to 1,000 cubic centimeters of clean water and the mixture thoroughly shaken. One cubic centimeter of this mixture contains one milligram of dirt. Quantities ranging from ½ to 9 cubic centimeters are now removed with a graduated pipette and each portion suspended in about 100 cubic centimeters of water. The suspensions are now filtered through absorbent cotton disks in the Gooch filter described above. The disks thus obtained, containing amounts of dirt ranging from ½ to 9 milligrams are mounted permanently upon well sized white paper and used as standards.

Relative Toxicity of Raw and Pasteurized Milk.

The accompanying tables represent the beginning of a series of tests undertaken with the object of studying the toxicity of raw and pasteurized milk. It is not our intention to draw final conclusions from the tests until a larger amount of experimental evidence has been accumulated. It may be stated, however, that the findings fail to support the contention so frequently advanced that pasteurized milk is more dangerous than raw milk from the standpoint of putrefaction. In fact, several assumptions which have been rather generally accepted are inconsistent with the facts brought out in the experiment.

Our early experiments point to the following conclusions, which are, however, stated tentatively:

1. That toxic bacterial products commonly develop in both raw and pasteurized market milk, which are sufficiently potent to prove fatal to guinea pigs under the conditions of the experiment.

2. That the elimination or partial elimination of acid forming bacteria in milk by pasteurization is not followed by the development of harmful bacterial products within the period in which the milk would ordinarily be consumed; e.g., six to twelve days from the time of pasteurization.

3. That pasteurization destroys the harmful products of bacterial growth, which may have developed in the milk previous to the pasteurization.

4. That raw market milk develops toxic bacterial products more quickly than pasteurized market milk.

Samples of market raw milk, market pasteurized milk and laboratory pasteurized milk of different degrees of staleness were injected intraperitoneally into guinea pigs. The results of the tests are as follows:

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Series No. 1 shows a sample of raw milk one day old, purchased in the open market, which killed the animal injected in twenty-two hours, and continued to produce fatal results in other animals subsequently injected up to the fifteenth day. Souring occurred on the third day. A portion of the same sample of milk, which was pasteurized in the laboratory when one day old, failed to produce any symptoms in the animal injected. On the eighth day it had a putrid odor and taste, but it was not until the eleventh day that it caused death of the animal injected.

Series No. 2 presents a sample of market raw milk, which failed to produce symptoms until the fourth day when the animal injected died in violent spasm. The sample continued to produce fatal results in animals injected up to the twelfth day, after which time no further injections were made. A portion of this same sample, when four days old, was pasteurized in the laboratory. This pasteurized sample produced no effect upon the animals injected until the thirteenth day after pasteurization. A sample of market pasteurized milk produced no symptoms until the tenth day.

Series No. 3 shows a market raw sample which produced symptoms in the injected animal on the first day and proved fatal on the second day. A portion of this sample when five days old was pasteurized in the laboratory. This pasteurized specimen, developed a putrid odor on the fifth day after pasteurization, but produced no symptoms in the animals injected up to the twelfth day after pasteurization, when the sample ran out. The sample of market pasteurized milk became putrid on the seventh day, but did not cause the death of the animal injected until the sixteenth day.

In our judgment, it can be safely assumed that a substance which produces no disturbance when injected into the peritoneum will not cause gastro-intestinal disturbances when taken by mouth, although it cannot be assumed that every sample which produced fatal results by peritoneal injection would necessarily have proved toxic if administered by mouth. The fact that all fatalities following injection occurred within a few hours, points to intoxication rather than bacterial infection as the cause of death.

HEALTHGRAMS.
From *The Bulletin.*

If your milk is not safe your life is not safe.

* * *

If you must buy milk from a dirty shop you can at least pasteurize the milk at home. Take a look at the shop.

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Relative Toxicity of Raw and Pasteurized Milk—Test Series No. 1.

Sample No.	Description	Bacterial Count per c c	Age of Sample	Date	Amount Injected c c	Condition of Sample	Results	Post Mortem
1*	Raw.	126,000,000	1 day	Oct. 4th	2	Sweet, odor and taste normal.	Pig died in 22 hours.	Congestion of peritoneum and viscera.
2	No. 1 past. in lab. at 75°C for 10 min.	16	1 day	Oct. 4th	2	Sweet, odor and taste normal.	Pig did not show any signs of illness.	
1	Raw.	.....	3 days	Oct. 6th	2	Slight sour taste and odor.	Pig died in about 14 hours.	Congestion of peritoneum and viscera.
2	Lab. past.	.....	3 days	Oct. 6th	2	Slightly bitter sweet taste	Pig perfectly well.	
1	Raw.	.....	7 days	Oct. 10th	2	Coag. sour taste and odor.	Pig died in less than 14 hours.	Congestion of peritoneum and viscera.
2	Lab. past.	.....	7 days	Oct. 10th	2	Curded—odor fishy, taste bitter and sweetish; not sour.	Pig perfectly well.	
1	Raw.	.....	8 days	Oct. 11th	2	Coag. sour taste and odor.	Pig died in six hours.	Congestion of peritoneum and viscera. Smear showed large bacillus spore bearer.
2	Lab. past.	.....	8 days	Oct. 11th	2	Curded—odor fishy and putrid, taste bitter.	Pig released well on Oct. 14th.	
1	Raw.	.....	11 days	Oct. 14th	2	Coag. smells like sour cheese; taste sour and slightly bitter.	Pig died in 5 hours.	Congestion of peritoneum and viscera. Smears showed large bacillus.
2	Lab. past.	.....	11 days	Oct. 14th	2	Curd separated; odor putrid, taste bitter, not sour.	Pig died in about 8 hours.	Congestion of peritoneum and viscera. Smears negative.
1	Raw.	.....	12 days	Oct. 15th	.....	Curd separated; odor putrid, taste bitter, not sour.	Pig died in about 4 hours.	
2	Lab. past.	.....	12 days	Oct. 15th	.....	Curd separated; odor putrid, taste bitter, not sour.	Pig died in about 6 hours.	
1	Raw.	.....	15 days	Oct. 18th	.....	Curd separated; odor putrid, taste bitter, not sour.	Pig died during night.	General congestion viscera. Gaseous distension of abdomen.
2	Past.	.....	15 days	Oct. 18th	.....	Curd separated; odor putrid, taste bitter, not sour.	Pig died during night.	General congestion of viscera.

* Mixed Raw Milk—Taken October 4th—Laboratory Sample No. 37882.

All samples were kept at room temperature. All injections were made into the abdominal cavity.

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RELATIVE TOXICITY OF RAW AND PASTEURIZED MILK—TEST SERIES NO. 2.

Sample No.	Description	Bacterial Count per c c	Age of Sample	Date	Amount Injected c c	Condition of Sample	Results	Post Mortem
1*	Raw.	730,000	1 day	Oct. 14th	2	Sweet milk.	Pig remained well.	
2*	Market past.	130,000	1 day	Oct. 14th	2	Sweet milk.	Pig remained well.	
3*	Lab. past. at 71°C for 10 minutes	10	1 day	Oct. 18th	2	Sweet taste and odor.	Pig remained well.	
1	Raw.	20,000,000	4 days	Oct. 18th	2	Slight sour taste, violent spasm and neurotoxic symptoms.	Pig died in 24 hours.	
2	Market past.	.....	4 days	Oct. 18th	2	Sweet taste and odor.	Pig remained well.	
3	Lab. past.	.....	3 days	Oct. 21st	2	Sweet taste and odor.	Pig remained well.	
1	Raw.	.....	7 days	Oct. 21st	3	Sour taste and odor; coagulated.	Pig died in 18 hours.	Congestion of peritoneum and viscera.
2	Market past.	.....	7 days	Oct. 21st	2	Sour, slightly bitter taste; coagulated.	Pig remained well.	
3	Lab. past.	.....	6 days	Oct. 24th	2	Slightly bitter taste; still sweet.	Pig remained well.	
2	Market past.	.....	8 days	Oct. 22nd	2	Sour bitter taste.	Pig remained well.	
3	Lab. past.	.....	8 days	Oct. 26th	2	Sweet taste and odor.	Pig remained well.	
1	Raw.	.....	10 days	Oct. 24th	2	Sour putrid taste.	Pig died during night.	Congestion of peritoneum and viscera.
2	Market past.	.....	10 days	Oct. 24th	2	Sour bitter putrid taste.	Pig died during night.	Congestion of peritoneum and viscera.
3	Lab. past.	.....	10 days	Oct. 28th	2	Bitter sweet taste; rennent curd.	Pig remained well.	
1	Raw.	.....	12 days	Oct. 26th	2	Same as 10th day.	Pig died during night.	Congestion of peritoneum and viscera.
2	Market past.	.....	12 days	Oct. 26th	2	Same as 10th day.	Pig died during night.	Congestion of peritoneum and viscera.
3	Lab. past.	.....	13 days	Oct. 31st	2	Bitter putrid taste; putrid odor.	Pig died during night.	Congestion of peritoneum and viscera.

*No. 1—Raw market milk in original container.
*No. 2—Pasteurized market milk in original container.
*No. 3—Is a portion of Sample No. 1 pasteurized in laboratory after standing four days on ice.
All samples kept at room temperature.
All injections made into abdominal cavity.

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Relative Toxicity of Raw and Pasteurized Milk—Test Series No. 3.

Sample No.	Description	Bacterial Count per c c	Age of Sample	Date	Amount Injected c c	Condition of Sample	Results	Post Mortem
1	Raw.	.....	Few hours.	Nov. 1st	2	Sweet.	Remained well.	
2	Market past.	.....	One day.	Nov. 1st	2	Sweet.	Remained well.	
1	Raw.	90,000,000	One day.	Nov. 2nd	2	Sweet.	Sick but recovered.	
2	Market past.	8,000,000	Two days.	Nov. 2nd	2	Sweet.	Remained well.	
1	Raw.	200,000,000	Two days.	Nov. 3rd	2	Sour, not curded.	Died during night.	General congestion of viscera; large bacillus in smears.
2	Market past.	30,000,000	Three days.	Nov. 3rd	2	Sweetish bitter taste.	Remained well.	
1	Raw.	2,500,000,000	Five days.	Nov. 5th	2	Sour, slightly curded.	Died in 15 hours.	General congestion of viscera; large bacillus and diplococcus.
2	Market past.	40,000,000	Five days.	Nov. 5th	2	Smell sweet, taste bitter.	Remained well.	
3	Lab. past.	No growth	First day after pasteurizing.	Nov. 5th	2	Sour taste, curded.	Remained well.	
2	Market past.	1,200,000,000	Six days.	Nov. 6th	2	Bitter sweetish taste.	Remained well.	
3	Lab. past.	90,000	Second day after pasteurizing.	Nov. 6th	2	Sour taste.	Remained well.	
2	Market past.	1,400,000,000	Seven days.	Nov. 7th	2	Bitter, putrid taste.	Remained well.	
3	Lab. past.	100,000	Third day after pasteurizing.	Nov. 7th	2	Sour taste, slightly bitter	Remained well.	
2	Market past.	1,200,000,000	Eight days.	Nov. 8th	2	.....	Remained well.	
3	Lab. past.	90,000 over	Four days after pasteurizing.	Nov. 8th	2	.....	Remained well.	
2	Market past.	16,000,000,000	Nine days.	Nov. 9th	2	.....	Remained well.	
3	Lab. past.	.....	Five days after pasteurizing.	Nov. 9th	2	Putrid odor.	Remained well.	
2	Market past.	.....	Eleven days after pasteurizing.	Nov. 11th	2	.....	Remained well.	
3	Lab. past.	.....	Seven days after pasteurizing.	Nov. 11th	2	.....	Remained well.	

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RELATIVE TOXICITY OF RAW AND PASTEURIZED MILK—TEST SERIES NO. 3.—*Continued.*

Sample No.	Description	Bacterial Count per c c	Age of Sample	Date	Amount Injected c c	Condition of Sample	Results	Post Mortem
2	Market past.	.....	Sixteen days after pasteurizing.	Nov.16th	2	Bitter taste, putrid odor.	Died during night.	General congestion of viscera; large bacillus in smears.
3	Lab. past.	.....	Eleven days after pasteurizing.	Nov.15th	2	Butyric acid odor; bitter sour taste.	Remained well.	
3	Lab. past.	.....	Twelve days after pasteurizing.	Nov.16th	2	Butyric acid odor; bitter sour taste.	Remained well.	

*No. 1—Raw—collected a few hours after milking. Taken from bucket from which contents were being sold to public.
*No. 2—Market pasteurized—collected in original pint containers.
*No. 3—A portion of sample No. 1 pasteurized after standing five days at room temperature. Heated for 20 minutes at 60° centigrade (140° F.)

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BACTERIAL COUNTS OF MARKET PASTEURIZED MILK.

Classified by Dealers—January 1st to June 1st, 1910.

DEALER NO.	No. of Samples	Average Count	Per Cent Below 500,000	Per Cent Above 1,000,000
4	6a	361,000	66.66	16.66
	2b	37,400	100	0
	8c	280,000	75	12.50
5	2b	116,000	100	0
7	79b	548,000	77.21	15.19
9	95a	702,000	73.68	15.17
	47b	230,000	89.36	8.51
	142c	553,000	79.58	13.39
10	2b	413,000	50	0
11	1b	60,000	100	0
12	14a	1,021,000	42.85	35.71
	5b	1,061,000	40	20
	19c	1,031,000	42.1	31.57
14	2b	356,000	100	0
15	36a	902,000	58.33	27.77
17	4b	84,850	100	0
18	4b	47,500	100	0
20	27a	353,000	88.18	11.11
	3b	185,000	100	0
	30c	336,900	86.66	10
21	5b	464,000	80	20
22	9a	122,000	100	0
	2b	88,500	100	0
	11c	106,000	100	0
23	3b	66,000	100	0
24	2a	8,000	100	0
	11b	1,601,000	54.54	27.27
	13c	1,356,000	61.53	23.07
25	3a	127,000	100	0
26	4a	700,000	75	25
	2b	5,780,000	0	100
	6c	2,377,000	50	50
28	2b	35,060	100	0
30	13b	130,300	100	0
31	2a	694,000	50	50
32	2a	4,500,000	0	100
33	2a	593,000	50	0
	2b	450,000	50	0
	4c	521,000	50	0
34	5b	121,000	100	0
36	7a	1,060,000	42.85	42.85
37	1a	77,000	100	0
38	7a	522,000	42.85	15.71
	2b	215,000	100	0
	9c	454,000	55.55	11.11
39	9a	5,326,000	22.22	66.66
	3b	1,733,000	0	100
	12c	4,429,000	16.66	75
41	2a	110,000	100	0
43	12a	1,461,000	50	41.66
	2b	550,000	0	0
	14c	1,330,000	42.85	35.71
45	4a	949,000	50	50
	8b	220,000	75	0
	12b	469,000	66.66	16.66
46	2a	2,750,000	0	100
	4b	109,000	100	0
47	6c	822,500	66.66	33.33
	2b	2,375,000	0	100
48	2a	23,000	100	0
	2b	2,700	100	0
51	4c	12,350	100	0
52	6a	1,322,000	66.66	33.33
53	4b	698,000	25	25
55	1b	375,000	100	0
	5b	62,500	100	0
57	2a	2,230,000	0	100
	9b	333,000	81.81	18.19
	11c	625,000	69.23	23.07

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BACTERIAL COUNTS OF MARKET PASTEURIZED MILK.—*Continued.*

DEALER NO.	No. of Samples	Average Count	Per Cent Below 500,000	Per Cent Above 1,000,000
58	53a	2,174,000	47.17	45.23
	8b	2,198,000	33.33	66.66
	56c	2,175,000	46.42	46.42
59	4a	2,482,000	25	75
	6b	295,000	83.33	16.66
	10c	1,169,000	60	40
60	4a	1,427,000	50	25
	7b	4,870,000	0	100
	11c	3,619,000	18.18	72.72

June 1st to September 30th, 1910.

DEALER NO.	No. of Samples	Average Count	Per Cent Below 500,000	Per Cent Above 1,000,000
1	8b	2,894,000	50	50
2	2b	22,000	100	0
3	4a	1,900,000	50	50
4	14a	1,564,000	64.28	35.72
5	5b	3,028,000	40	40
7	37b	1,259,000	70.27	21.89
8	2a	5,645,600	50	50
9	63a	3,147,000	65.07	30.15
	37b	151,000	91.89	2.70
	100c	2,038,000	75	20
11	1b	83,000	100	0
12	2a	960,000	0	50
13	2a	2,125,000	0	100
15	14a	1,142,000	66.66	16.66
17	2b	866,000	50	50
16	3b	660,000	66.66	33.33
19	2a	43,000,000	0	100
20	10a	6,279,000	40	40
	3b	6,596,000	0	100
	13c	6,352,000	30 76	53.84
21	3b	3,312,000	66.66	33.33
22	35a	6,137,000	42.85	37.14
	6b	9,520 000 (Leaving out one high count)	83.33	16.66
	5b	224,000	100	0
	41c	6,632,000	48.78	34.14
24	2b	750,000	0	0
25	8a	1,695,000	12.5	50
28	2b	2,135,000	50	50
30	3b	3,210,000	0	66.66
31	16a	2,188,000	18.75	68.75
32	6a	2,225,000	35.33	66.66
33	7a	5,353,000	28 57	71.43
	2b	1,255,000	50	50
	9c	4,442,000	33.33	66.66
35	2a	14,614,000	50	50
36	5a	30,640,000	0	100
37	5a	43,720,000	0	100
	2b	750,000	0	0
	7c	31,428,000	0	71.42
38	11a	900,000	9.09	81.81
	4b	3,380,000	25	50
	15c	7,503,000	13.33	73.33
39	18a	7,414,000	38.88	55.55
	3b	1,527,000	33.33	33.33
	21c	6,573,000	38.09	52.38
41	5a	279,500	80	20
	2b	6,294,000	50	50
	7c	1,855,000	71.42	28.57
43	15a	4,272,000	26.16	60
44	2a	440,000	50	0
46	6a	5,592,000	16.66	83.33

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BACTERIAL COUNTS OF MARKET PASTEURIZED MILK.—*Continued.*

DEALER NO.	No. of Samples	Average Count	Per Cent Below 500,000	Per Cent Above 1,000,000
48	2a	317,000	100	0
	2b	715,000	50	50
	4c	516,000	75	25
49	7a	1,004,000	59.14	28.57
50	4a	1,360,000	75	25
	2b	120,000	100	0
	6c	812,000	83.33	16.66
51	18a	3,088,000	33.33	66.66
55	2a	83,000	100	0
56	2a	1,112,000	50	50
	2b	615,000	50	0
	4c	863,000	50	25
57	12b	4,520,000 (Leaving out creams)	66.66	25
	9b	154,000	88.88	0
58	64a	5,973,000	32.81	53 12
61	3a	1,066,000	33.33	66.66
62	2a	55,000	100	0
	5b	179,000	100	0
	7c	129,000	100	0

October 1st to December 31st, 1910.

DEALER NO.	No. of Samples	Average Count	Per Cent Below 500,000	Per Cent Above 1,000,000
3	4a	164,000	100	0
	2b	5,085,000	50	50
	6c	1,768,000	83.33	16.66
4	4a	610,000	75	25
7	2b	16,000	100	0
8	2a	864,000	50	50
9	30a	381,000	80	6.06
15	6a	3,352,000	83.33	16.66
20	5a	2,512,000	80	20
21	5a	1,201,000	60	40
	2b	55,000	100	0
	77c	874,000	71.42	28.57
22	21a	798,000	85.71	14.28
27	5a	1,198,000	60	40
	4b	180,000	100	0
	9c	734,000	77.77	22.33
29	4a	8,335,000	50	50
31	9a	1,631,000	44.44	33.33
34	4a	95,000	100	0
36	3a	2,400,000	33.33	66.66
38	9a	2,191,000	8.33	66.66
	22b	604,000	72.72	18.18
	31c	1,000,000	54 83	32.25
40	2b	190,000	100	0
42	6a	1,002,000	83.33	16.66
	3b	201,000	100	0
	9c	735,000	88.88	11.11
49	1a	60,000	100	0
50	4a	945 000	50	25
52	3b	210,000	100	0
55	1b	62,000	100	0
56	2a	26,000	100	0
	4b	114,000	100	0
	6c	35,000	100	0
57	4a	243,000	100	0
	2b	112,000	100	0
	6b	199,000	100	0
58	21a	217,000	90.47	9.52
60	9a	2,795,000	66.66	33.33

a—Samples are those pasteurized by firm named, but taken from a retail firm.
b—Samples are those pasteurized by firm named and taken directly from them.
c—Is total of both.

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MONTHLY AVERAGES OF BACTERIAL COUNTS OF MILK IN 1910.

	Total Examinations	Average Per C. C.	Per Cent of Samples Below 500,000	Per Cent of Samples Above 1,000,000
JANUARY				
Pasteurizing Plants	41	40,700	100	0
Pasteurized Market	112	277,800	83.92	8.92
Raw	64	1,067,000	45.31	38.06
FEBRUARY				
Pasteurizing Plants	41	213,000	87.80	9.75
Pasteurized Market	155	928,000	69.03	23.22
Raw	61	1,768,000	47.54	35
MARCH				
Pasteurizing Plants	80	334,000	85	11.25
Pasteurized Market	154	1,560,000	45.45	40.26
Raw	17	1,664,000	35.29	52.94
APRIL				
Pasteurizing Plants	36	124,000	94.44	0
Pasteurized Market	120	694,000	78.33	15.83
Raw	43	5,948,000	69.76	20.93
MAY				
Pasteurizing Plants	39	79,700	94.87	0
Pasteurized Market	76	1,273,000	63.15	25
Raw	61	4,893,000	57.37	39.34
JUNE				
Pasteurizing Plants	28	371,000	75	10.71
Pasteurized Market	66	1,492,000	53.03	39.39
Raw	44	4,507,000	25	59.09
JULY				
Pasteurizing Plants	74	185,000	94.59	4.06
Pasteurized Market	129	3,106,000	48.83	41.08
Raw	588	12,235,000	19.21	75.34
AUGUST				
Pasteurizing Plants	52	571,656	80.77	13.46
Pasteurized Market	222	5,445,000	47.29	46.80
Raw	579	16,235,800	21.58	78.83
SEPTEMBER				
Pasteurizing Plants	44	575,540	84.09	15.91
Pasteurized Market	148	3,865,600	48.58	39.18
Raw	371	14,097,000	17.52	78.43
OCTOBER				
Pasteurizing Plants	83	314,400	93.63	6.36
Pasteurizing Plants (leaving out two very high counts)	31	28,240	100	0
Pasteurized Market	169	1,258,000	73.37	17.75
Raw	174	8,580,600	27.58	64.34
NOVEMBER				
Pasteurizing Plants	23	38,000	100	0
Pasteurized Market	49	388,000	85.71	8.19
Raw	77	1,085,000	63.63	23.37
DECEMBER				
Pasteurizing Plants	3	2,000	100	0
Pasteurized Market (leaving out creams)	17	644,000	70.58	23.53
Pasteurized Market	14	182,000	85.71	7.13
Raw	29	922,000	72 41	20.68
Raw (leaving out one very high count)	28	491,000	.....	.....

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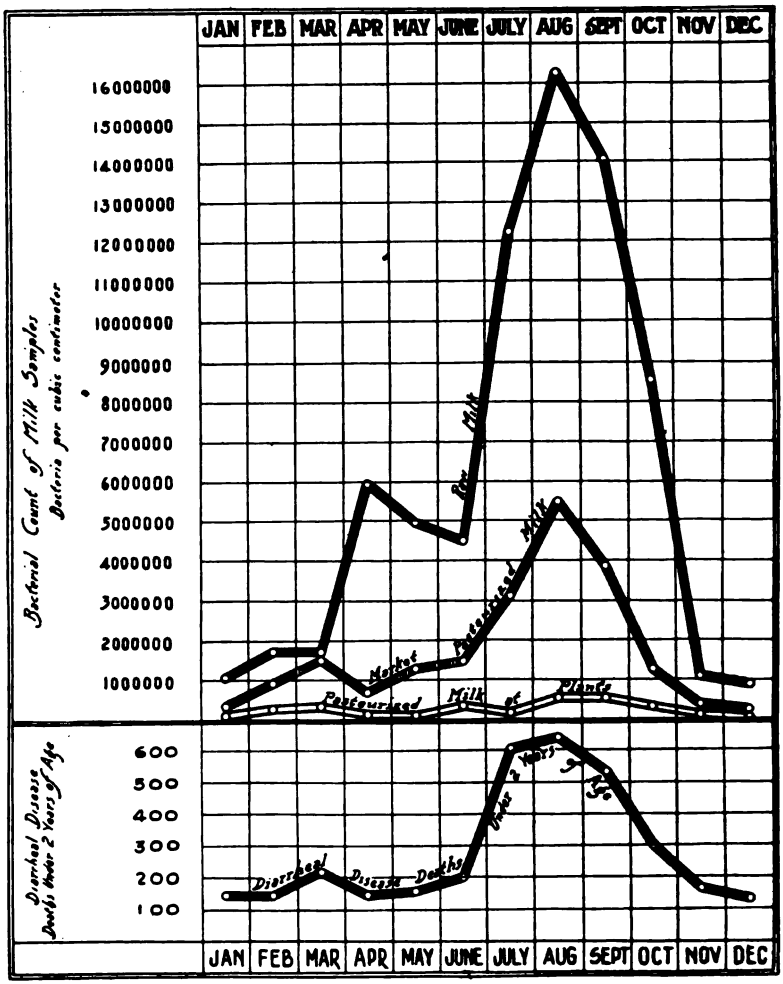
BACTERIA FOUND IN RAW AND PASTEURIZED MILK

Monthly Averages of Bacterial Counts, 1910

Compared With

MONTHLY DEATHS AMONG CHILDREN FROM DIARRHEAL DISEASES



EFFICIENCY TESTS OF PASTEURIZING PLANTS.

During the past twelve months 102 inspections of pasteurizing plants have been made with the object of determining the efficiency of the various machines in actual operation under practical conditions. The tests as a whole show good results from the standpoint of the reduction of the bacterial content. Instances in which unsatisfactory results were obtained are not referable to any particular type of machine, but appear to be due to faulty methods of operation.

The temperature standards adopted by the Department of Health for the control of the operation of pasteurizing plants are: For continuous pasteurization a minimum of seventy-one degrees centigrade or one hundred and sixty degrees Fahrenheit maintained for one minute; for held pasteurization a minimum of sixty degrees centigrade or one hundred and forty degrees Fahrenheit maintained for twenty minutes. These standards are based upon the experimental work of Russell and Hastings (1) and M. J. Rosenau (2). Russell and Hastings determined that exposure to a temperature of seventy-one degrees centigrade for one minute is sufficient to destroy the tubercle bacillus in milk. Rosenau concludes from his experiments that the common disease-producing organisms conveyed by milk lose their infectivity after exposure to sixty degrees centigrade for twenty minutes.

There is no doubt that the type of pasteurization recommended by Rosenau, known as held pasteurization, gives the more satisfactory results in that it more surely eliminates the disease germs and at the same time produces no perceptible physical change in the milk. The weakness of the continuous or flash pasteurization lies chiefly in the fact that the time of exposure is difficult to determine and to regulate. A few of the machines are so constructed that an exposure of one minute or over is assured. Others, notably types A, B and D, frequently permit an exposure of one-half minute or less. Pasteurization of this sort is of very questionable value and probably has little influence on the viability of pathogenic organisms. An additional objection to flash pasteurization, which is of more importance commercially than from the standpoint of public health, lies in the fact that the high temperatures alter the flavor of the milk and prevent natural rising of the cream.

From the standpoint of municipal control, however, the installation of continuous or flash machines may be considered the first step in the enforcement of efficient pasteurization. The second step, that of securing the installation of devices for maintaining the temperature a definite period of time, should not be lost sight of if the best results are to be obtained. Judged from this standpoint the enforcement of pasteurization in Chicago is at present in a transitional stage as about eighty per cent of the dealers have installed flash machines, while only relatively few

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have installed holding devices. The effort to improve conditions from now on should be directed towards securing the installation of holding devices and toward the elimination of errors in the methods of operation which tend to bring about bacterial contamination of the product.

(1) Report Wis. Agr. Ex. Sta. 1900, Page 147.
(2) Bulletin 42, Pub. H. &. M. Hos. Service.

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910.

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
June.....	1	Continuous... Type A	160	45	1376	Raw	17,000,000
					1377	Pasteurized 160° F.	8,700
					1378	From cooler 45° F.	55,000
					1381	Bottled	120,000
January	2	Continuous... Type A	160	40	247	Raw	60,000
					248	Raw from warmer 73½° F.	214,000
					249	Raw from separator	54,000
					250	Pasteurized	4,400
					251	Cooled	600
June.....	2	Continuous... Type A	160	40	1406	Raw	1,300,000
					1407	Pasteurized and cooled	88,000
					1408	Bottle filler	1,500,000
					1409	Bottled	1,280,000
January	3	Continuous... Type A	160	42	118	Raw	400,000
					119	Pasteurized 160° F.	7,000
					120	From cooler 42° F.	19,000
					124	Bottled and capped	37,000
June	3	Continuous... Type A	150	51	1423	Raw	3,600,000
					1425	Pasteurized and cooled 15°	900,000
					1426	Bottle filler	900,000
					1427	Bottle uncapped	1,350,000
					1428	Bottle capped	1,460,000
July.....	4	Continuous... Type A	160	58	1672	Raw	2,800,000
					1673	Pasteurized 165° F.	10,000
					1675	Bottle filler 58° F.	32,000
					1676	Bottle uncapped	39,000
					1678	Bottle capped	103,000
October	5	Held 20 min.. Type G	142	50	4716	Raw machine 46° F.	200,000
					4717	Machine 142° F.	Less than 2,000
					4718	Machine held 20 min.	
					4719	Cooled 50° F.	
					4720	Bottler	1,600
					4721	Bottle before capping	4,800
					4722	Bottle after capping	5,000
April	6	Continuous... Type A	160	36	867	Raw	5,000,000
						Pasteurized 160° F.	5,100
						Bottler	46,000
						Bottled	5,700
July.....	6	Continuous... Type A	150	46	2142	Raw	1,010,000
					2143	Machine 150° F.	36,000
					2144	Cooler 46° F.	4,800
					2145	Bottler	118,000
					2146	Bottle before capping	199,000
					2147	Bottle after capping	168,000
August..	6	Type A..... Continuous	155	50	2422	Raw	2,380,000
					2423	Pasteurized 155° F.	35,000
					2424	Cooled 55° F.	122,000
					2425	Bottle filler	77,800
					2426	Bottle uncapped	82,500
					2427	Bottle capped	73,500
August	7	Type D..... Continuous	165	48	2860	Raw	650,000
					2861	Pasteurized from machine 165° F.	4,500
					2862	Cooler 48°	7,600
					2863	Bottle filler	127,000
					2864	Bottle uncapped	108,000
					2865	Bottle capped	66,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
February	8	Type B..... Continuous	165	50	343	Raw.....	181,000
					344	Raw.....	100,000
					345	Heated to 59° for 2 min.....	300,000
					346	Heated to 59° for 2 min	237,000
					347	Entrance to separator... ...	300,000
					348	Entrance to separator.....	310,000
					349	Pasteurizer	300,000
					351	Cooler...	160,000
					352	Cooler.....	22,000
					353	Bottle after capping.....	21,500
					354	Bottle after capping.....	24,500
April	9	Type B..... Continuous	160	54	979	Raw.....	69,000
					980	Pasteurized 160° F.....	2,000
					981	Cooler 54° F.....	14,000
					982	Bottle uncapped.....	16,000
					983	Bottle capped.....	14,000
August..	9	Type B..... Continuous	158	51	3175	Raw.....	19,000,000
					3176	Machine 158° F.....	40,000
					3177	Cooler 51° F.....	11,000
					3178	Bottler.....	16,000
					3179	Bottle before capping.....	44,000
					3180	Bottle after capping.....	34,000
January	10	Type F..... Continuous	160	40	164	Raw from mixer 160° F.....	1,470,000
					166	Raw from warmer 40° F.....	1,000,000
					168	Pasteuriz'd from past. proper	60,000
					170	From retarder.....	2,200
					172	From cooler.....	1,200
					174	Bottle capped.....	8,000
August..	10	Type F..... Continuous	150	42	2926	Raw.....	41,000,000
					2927	Machine 150° F.....	4,200
					2928	Cooler 42° F.....	2,740,000
					2929	Bottler.....	3,200,000
					2930	Bottle before capping	2,150 000
					2931	Bottle after capping.....	1,800,000
March...	11	Type A..... Continuous	155 to 160	42	749	Raw mixer.....	3,400,000
					748	Pasteurized 155° and 160° F..	42,000
					750	Pasteurized 160°-42° F	4,000
					751	Bottle uncapped.....	84,600
					753	Bottle capped.....	50,800
May	12	Type B..... Continuous	165	1st, 84 / 2nd, 54	1113	Raw.....	7,500,000
					1114	Pasteurized 165° F.....	34,000
					1115	First cooler 84° F.....	36,200
					1116	Second cooler 54° F.....	1,000,000
					1117	Can.....	500,000
March...	13	Type E..... Held 10 min.	150	60	570	Raw.....	50,000
					571	Pasteurized 150° F.....	4,500
					572	Pasteurized, held 10 min....	2,800
					573	Pasteurized bottle filler	3,200
					574	Pasteurized.....	8,500
April	14	Type A..... Continuous	160 to 165	48	899	Raw.....	100,000
					900	Pasteurized 160°, cooled 48° F.	3,000
					901	Pasteurized 160°, cooled 48° F.	1,000
					905	Pasteurized 165° F.....	1,000
					902	Bottled.....	2,000
					904	Bottled and capped.....	18,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
March...	15	Type A..... Continuous	160	44	672	Raw.....	1,600,000
					673	Pasteurized 160° F....	40,000
					674	Cooler 44° F.....	3,500
					675	Bottling machine.....	43,000
					677	Bottle uncapped.....	47,000
					678	Bottle capped.....	52,000
July.....	15	Type A..... Continuous	165	58	1642	Raw.....	25,300,000
					1643	Machine 165° F.....	250,000
					1644	Cooler 58° F.....	38,000
					1645	Bottler.....	245,000
					1646	Bottle before capping	240,000
					1647	Bottle after capping.....	148,000
October	15	Type A..... Continuous	164	..	4335	Raw.....	20 000,000
					4336	Machine at 164° F.....	40,000
					4337	Cooler.....	66,000
					4338	Bottler.....	120,000
					4339	Bottle before capping	72,000
					4340	Bottle after capping.....	40,000
August..	16	Type E..... Held 20 min.	142	68	2795	Raw.....	415,000
					2796	Pasteuriz'd from mach. 142°F.	77,500
					2797	Held 20 min. 141° F.....	75,000
					2798	Cooler.....	82,000
					2799	Cooler 68° F.....	190,000
					2800	Bottle filler	166,000
					2801	Bottle capped 68° F...	355,000
January	17	Type A..... Continuous	...	..	241	Raw.....	200,000
					242	Raw.....	500,000
					243	Pasteurized.....	15,000
					244	Cooled	8,000
					245	Bottle capped.....	250,000
June	17	Type A..... Continuous	156	..	1325	Raw.....	660,000
					1326	Pasteurized 156° F.....	124,000
					1327	Cooler (?)	59,000
					1328	Bottle filler	75,000
					1330	Bottle capped	150,000
Nov	18	Type A..... Continuous	160	55	4859	Raw.....	52,000
					4860	Machine 160° F.....	6,000
					4861	Cooler 55° F.....	10 000
					4862	Bottler.....	10.400
					4863	Bottle before capping	40,000
					4864	Bottle after capping.....	37.000
					4865	Previous day's milk	400,000
July.....	19	Type E..... Held 20 min.	146 & 147	70	1954	Raw.....	410,000
					1955	Pasteurized 147° F.....	12,200
					1956	Held 20 min. 146°.....	300,400
					1957	Cooled 70°.....	300,300
					1958	Bottle uncapped	17,500
					1959	Bottle capped.....	79,000
March...	20	Type F..... Continuous	162	40	638	Raw.....	300,000
					640	Raw.....	350,000
					641	Outlet pasteurizer.....	110,000
					642	Inlet bottler	32,000
					643	Bottle uncapped.....	400.000
					644	Bottle capped..... ..	500,000
Sept.....	21	Type A..... Continuous	170	..	4028	Raw.....	16,000,000
					4029	Machine 170° F.....	4,000
					4030	Cooler.....	6.000
					4031	Eight-gallon can	48,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
June.....	22	Type A..... Continuous	150	44	1335	Raw.....	3,600,000
					1336	Pasteurized 150° F.....	40,000
					1337	Cooled 44° F.....	27,000
					1339	Bottle before capping	12,000
					1340	Bottle capped.....	5,000
July.....	23	Type G..... Held	142	52	1547	Raw.....	48,000,000
					1548	Pasteurized 142° F.....	319,000
					1549	From machine 52° F.....	91,000
					1550	Eight-gallon can 52° F.....	97,000
					1551	Bottle before capping	21,000
					1552	Bottle after capping.....	64,000
March...	24	Type E..... Held 20 min.	147	60	803	Raw.....	5,000,000
					806	Held in can 20 min.....	22,000
					807	Cooler.....	36,000
					808	Bottle uncapped.....	77,600
					809	Bottle capped.....	84,000
July.....	24	Type E..... Held 20 min.	144	..	1602	Raw.....	14,900,000
					1603	Pasteuriz'd from mach. 144°F.	514,000
					1604	Held 20 min.....	148,000
					1606	Bottle filler	280,000
					1607	Bottle capped	210,000
Sept.....	24	Type E..... Held 20 min.	146	..	4266	Raw.....	240,000
					4267	Machine 146° F.....	10,000
					4268	Eight-gallon can 145° F.....	160,000
					4269	Eight-gal. can held 15 min...	22,000
					4271	Bottle before capping	130,000
					4272	Bottle after capping.....	170,000
Nov	25	Type A..... Continuous	160	42	4866	Raw.....	56,000
					4867	Machine 160° F.....	2,000
					4868	Cooler.....	1,600
					4869	Bottle filler	2,200
					4870	Bottle before capping	4,000
					4871	Bottle after capping.....	12,000
					4872	Previous day's milk.....	30,000
Feb.....	25	Type A..... Continuous	156	40	429	R. mixer	244,000
					430	R. mixer 40°	89,000
					431	Cooler outlet.....	3,500
					432	Cooler outlet.....	6,000
					433	Bottled	116,000
					434	Bottled	135,000
Nov	26	Type B..... Held 15 min.	...	..	4797	Raw.....	600,000
					4798	Machine 175°.....	No growth
					4799	Eight-gal can after 10 min..	No growth
					4800	Trough of cooler.....	9,200
					4801	Bottle before capping	100,000
					4802	Bottle after capping.....	140,000
					4803	Previous day's milk.....	200,000
May	27	Type F..... ... Continuous	150	..	1240	Raw.....	1,900,000
					1241	Pasteurized 150° F.....	8,000
					1242	Cooler.....	9,000
					1243	Bottle uncapped.....	9,300
					1244	Bottle capped.....	16,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS; 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
October	28	Type E..... Held 15 min.	155	..	4387	Raw.....	4,000,000
					4388	Machine at 155°.....	20,000
					4389	Top of cooler.....	20,000
					4390	Trough of cooler.....	24,000
					4391	Eight-gal can after cooling.	110,000
					4392	Bottle before capping.....	5,400
					4393	Bottle after capping.....	10,000
July.....	29	Type A..... Continuous	160	50	2333	Raw.....	4,750,000
					2334	Pasteurized 160° F.....	205,000
					2335	Cooled 50° F.....	102 000
					2336	Bottle filler.....	146,000
					2337	Bottle uncapped.....	125,000
					2338	Bottle capped.....	57,000
July.....	30	Type E..... Held 20 min.	145	70	2242	Raw.....	22,000,000
					2243	Pasteuriz'd from mach. 145° F.	64,000
					2244	Held 20 min. 70° F.....	15,000
					2246	Bottle uncapped.....	6,500
					2247	Bottle capped.....	4,000
April....	31	Type A..... Continuous	160	44	1022	Raw.....	160,000
					1023	Pasteurized 160° F., cooled to 44° F..	50,000
					1024	Bottle filler.....	200,000
					1025	Bottle uncapped.....	580,000
					1026	Bottle capped.....	527,000
July.....	31	Type A..... Continuous	180	40	2196	Raw.....	6,400,000
					2197	Pasteurized 180° F.....	7,000
					2198	Cooled.....	1,000
					2199	Bottle filler.....	4,700
					2200	Bottle uncapped.....	62,000
					2201	Bottle capped.....	88,500
March...	32	Type F..... Continuous	152	42	645	Raw.....	3,000,000
					646	Raw.....	5,000,000
					647	Outlet Pasteurizer.....	370 000
					648	Cooler.....	100,000
					...	Bottle filler.....	1,300,000
					649	Bottled.....	1,700,000
Dec.....	33	Type E..... Held 20 min.	142	50	5556	Raw.....	120,000
					5557	Pasteurized 142° F. and cooled 50° F..	40,000
					5558	Raw.....	400,000
					5559	Pasteuriz'd 155° F. and cooled	20,000
					5560	Held 20 min. 152° F. Less than	20,000
					5562	Past. Held 20 min. 152° F. Less than..	20,000
July.....	33	Type E..... Held 20 min.	...	..	1500	Raw.....	2,040,000
					1502	Past. 150° F., held 20 min.....	63,000
					1503	Cooled.....	21,000
					1504	Bottle uncapped.....	1,054,000
					1505	Bottle capped.....	3,600,000
Sept.....	34	Type A..... Continuous	165	45	4089	Raw.....	5,900 000
					4090	Machine 165° F.....	Less than
					4091	Cooler 45° F.....	2,000
					4092	Bottler.....	4 000
					4093	Bottle before capping.....	12,400
					4094	Bottle after capping.....	35,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
May.....	35	Type A..... Continuous	165	45	1263	Raw.....	200,000,000
					1264	Past. 165° and cooled 45°.....	30,000
					1266	Bottle uncapped.....	348,000
					1267	Bottle capped.....	302,000
Feb.....	36	Type B..... Continuous	158	46	484	.....	1,020,000
					486	Pasteurized.....	8,000
					...	Cooler.....	63,000
					488	Capped.....	1,400,000
					489	Capped.....	1,800,000
June	37	Type F..... Continuous	162	45	1351	Raw.....	1,120,000
					1352	Pasteurized 162° F.....	16,500
					1354	Bottle filler 45° F.....	53,000
					1356	Bottle capped.....	70,000
Sept.....	37	Type B..... Continuous	162	45	4061	Raw.....	9,000,000
					4062	Machine 162° F.....	5,000
					4063	First cooler 70° F.....	13,000
					4064	Second cooler 45° F.....	220,000
					4065	Bottler.....	4,000
					4066	Bottle before capping.....	50 000
					4067	Bottle after capping.....	36,000
January	38	Type D..... Continuous	170	40	27	Raw.....	82,000
					28	Raw.....	338,000
					29	Pasteurized 170° F.....	41,000
					30	Pasteurized 40° F.....	1,100
					31	Pasteurized, bot'd and cap'd	1,600
					32	Pasteurized, bot'd and cap'd	3,100
July.....	38	Type D..... Continuous	175	50	1912	Raw.....	52,000
					1913	From machine 175° F.....	2,000
					1914	Cooler 50° F.....	15,700
					1916	Bottle before capping.....	86,000
					1917	Bottle after capping.....	22,800
August..	38	Type D..... Continuous	170	48	2579	Raw.....	58,000
					2580	Machine 170° F. Less than..	10,000
					2581	Cooler 48° F.....	42,500
					2583	Bottle before capping.....	1,120,000
					2582	Bottler.....	77,000
					2584	Bottle after capping.....	103,000
August..	38	Type D..... Continuous	180	49	2644	Raw.....	150,000
					2645	Machine 180°.....	8,100
					2646	Cooler 49°.....	45,000
					2647	Bottler.....	42,000
					2648	Bottle before capping.....	205,000
					2649	Bottle after capping.....	130,000
August..	38	Type D..... Continuous	172	51	2697	Raw.....	170,000
					2698	Pasteur'd 172° F. Less than.	1,000
					2699	Cooled 51° F.....	16,000
					2700	Bottle filler.....	49,000
					2701	Bottle uncapped.....	43,500
					2702	Bottle capped.....	37,500
August..	38	Type D..... Continuous	172	51	3319	Bottle just filled.....	1,200,000
					3320	Bottler.....	500,000
					3321	Cooler.....	495,000
					3322	Machine 120° F.....	465,000
					3323	Raw.....	1,030,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
August..	38	Type D..... Continuous	172	51	3350	Raw.....	2,300,000
					3351	Machine 148° F.....	176,000
					3352	Cooler 44° F.....	318,000
					3353	Bottler.....	104,000
					3354	Bottle before capping.....	267,000
August..	38	Type D..... Continuous	172	51	3371	Raw.....	6,800,000
					3372	Machine 172° F.....	No count
					3373	Cooler 52° F.....	120,000
					3374	Bottler.....	No count
					3375	Bottle before capping.....	2,400,000
					3376	Bottle after capping.....	840,000
Sept.....	39	Type E..... Held 20 min.	150	60	4294	Raw.....	2,500,000
					4295	Machine at 150° F.....	2,000
					4296	Eight gallon can.....	10,000
					4297	Eight gal. can after 10 min...	20,000
					4298	Tank over cooler.....	23,900
					4300	Cooler.....	400,000
					4301	Eight gal. can after cooling..	500,000
					4302	Bottle before capping.....	238,000
					4303	Bottle after capping.....	420,000
October	39	Type E..... Held 20 min.	140	50	4342	Raw.....	550,000
					4343	Machine 140° F.....	5,800
					4344	Vat over cooler.....	10,000
					4345	Cooler at 50° F.....	40,000
					4346	Bottler.....	40,000
					4347	Bottle before capping.....	22,000
					4348	Bottle after capping.....	24,600
January	40	Type A..... Continuous	155	45	151	Raw.....	3,000,000
					153	Pasteurized and cooled.....	205,000
					155	Bottled and capped.....	125,000
Sept.....	41	Type E..... Held 15 min.	152	72	4258	Raw—eight gallon can.....	2,700,000
					4259	Raw—receiving tank.....	1,300,000
					4260	Machine at 152° F.....	7,800
					4261	Eight gallon can as holder...	9,000
					4262	Eight gal. can after 15 min.	1,400
					4263	Top of cooler.....	15,200
					4264	Bottom of cooler.....	Less than 2,000
					4265	Eight gal. can after cooling..	48,000
Dec.....	42	Type D..... Continuous	165	40	5609	Raw.....	250,000
					5610	Past. from mach. 165°-40° F.	100
					5611	Pasteurized.....	16,000
					5612	Pasteurized.....	20,000
					5613	Pasteurized.....	40,000
May.....	43	Type D..... Continuous	162	42	1139	Raw.....	1,500,000
					1140	Pasteurized 162° F.....	2,200
					1141	Cooler.....	1,500
					1142	Bottler.....	2,000
					1143	Can.....	8,500
April....	44	Type A..... Continuous	160-170-165	45	881	Raw.....	110,000
					882	Pasteurized 160° F.....	8,500
					884	Pasteurized 170° F.....	1,000
					885	Pasteurized 165° F.....	1,000
					886	Cooler 45° F.....	33,600
					887	Bottled and capped.....	37,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
Sept.....	45	Type B..... Continuous	161	42	4238	Raw.....	10,000,000
					4239	Machine 161° F.....	No count
					4240	First cooler 70° F.....	160,000
					4241	Second cooler 42° F.....	2,000,000
					4242	Bottler.....	3,000,000
					4243	Bottle before capping.....	1,900,000
					4244	Bottle after capping.....	1,040,000
Feb.....	46	Type A..... Continuous	160	50	328	Raw mixer.....	141,000
					329	Raw mixer.....	51,000
					330	Pasteurizer outlet.....	1,000
					331	.....	1,500
					332	Trough.....	1,100
					333	Trough.....	1,600
					334	Bottled.....	92,000
					335	.....	127,000
Nov.....	47	Type D..... Continuous	160	48	4804	Raw.....	1,500,000
					4805	Machine 166° F.....	80,000
					4806	Cooler 48° F.....	90,000
					4807	Bottler.....	40,000
					4808	Bottle before capping.....	50,000
					4809	Bottle after capping.....	120,000
					4810	Previous day's milk.....	170,000
January	48	Type B..... Continuous	164	50	98	Raw.....	701,000
					99	Pasteurized.....	2,300
					100	From cooler.....	6,000
					101	Bottled and capped.....	10,000
April	48	Type B..... Continuous	160	..	1045	Raw.....	375,000
					1046	Pasteurized 160° F.....	12,000
					1047	Cooler.....	122,000
					1049	Bottle uncapped.....	278,000
					1050	Bottle capped.....	210,000
Sept.....	49	Type G..... Held 20 min.	148	50	4114	Raw.....	2,600,000
					4115	Machine 148° F.....	2,400
					4116	Cooler 50° F.....	6,000
					4117	Bottler.....	3,400,000
					4118	Bottle before capping.....	4,600,000
					4119	Bottle after capping.....	6,600,000
May.....	50	Type A..... Continuous	150	43	1216	Raw.....	1,800,000
					1217	Pasteurized 150° F.....	100
					1218	Cooled 43° F.....	14,000
					1219	Bottler.....	52,000
					1220	Bottle uncapped.....	90,000
					1221	Bottle capped.....	90,000
May.....	51	Type A..... Continuous	155–160	50	1087	Raw.....	124,000
					1088	Pasteurized and cooled 50° F	7,500
					1089	Bottle uncapped.....	21,000
					1090	Bottle capped.....	27,000
July.....	51	Type A..... Continuous	155–160	50	1485	Raw.....	8,000,000
					1487	Pasteurized and cooled 150° F	44,800
					1489	Bottle capped.....	284,000
January	52	Type F..... Held 20 min.	145	40	204	Raw.....	5,500,000
					205	Raw from separator.....	520,000
					208	Pasteurized 145° F.....	2,500
					210	From Cooler 40° F.....	4,500
					212	Bottled and capped.....	25,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
Feb.....	53	Type F..... Continuous	155	40	413	Raw entering separator.....	525,000
					414	Raw inlet to pasteurizer.....	550,000
					415	Raw inlet to pasteurizer.....	600,000
					416	Pasteurizer outlet.....	7,200
					418	Past. outlet cooler 40° F.....	6,200
					417	Pasteurizer outlet.....	6,200
					419	Past. outlet cooler 40° F.....	15,000
					422	Bottled.....	12,000
					423	Bottled.....	14,400
Nov.....	54	Type E..... Held 15 min.	175	68	4797	Raw.....	600,000
					4798	Machine 175°.....	less than 2000
					4799	Eight-gal. can held 10 min..	
					4800	Cooler.....	9,200
					4801	Bottle before capping.....	100,000
					4802	Bottle after capping.....	140,000
					4803	Previous day's milk.....	200,000
March...	55	Type F..... Continuous	154	42	702	Raw.....	600,000
					704	Pasteurized 154° F.....	8,000
					705	Pasteurized cooler 42° F.....	2,000
					706	Bottling machine.....	7,000
					707	Bottle uncapped.....	36,600
					708	Bottle capped.....	75,000
March...	56	Type E..... Held 20 min.	147–145–143	60	823	Raw.....	2,000,000
					824	147° F.—20 minutes.....	34,000
					825	147° F.—10 minutes.....	184,000
					826	143° F.—20 minutes.....	100,000
					828	Bottle uncapped.....	33,000
					829	Bottle capped.....	26,000
July.....	56	Type E..... Held 20 min.	146–142	74	1478	Raw.....	5,400,000
					1479	Past. from machine 146° F...	400,000
					1480	Held 20 minutes 142° F.....	3,800
					1481	Cooled 74° F.....	150,000
					1483	Bottle uncapped.....	150,000
					1484	Bottle capped.....	600,000
July.....	57	Type A..... Continuous	168	60	1742	Raw.....	4,000,000
					1743	Pasteurized 168° F.....	1,200
					1744	Cooler 60° F.....	10,000
					1745	Bottle filler.....	25,500
					1746	Bottle uncapped.....	28,000
					1747	Bottle capped.....	36,000
Feb.....	58	Type B..... Continuous	152½	53	292	Raw—mixing tank.....	7,000,000
					293	Raw—entering separator....	3,600,000
					294	Raw—leaving separator.....	9,200,000
					295	Outlet of pasteurizer 152½° F	294,000
					296	Outlet cooler 53° F.....	750,000
					297	Bottled.....	1,380,000
Dec.....	59	Type A..... Continuous	150	75	19	Raw.....	140,000
					20	Raw.....	58,000
					21	Past. and cooled 150° F 75° F	15,000
					22	Pasteurized.....	10,000
					23	Bottle capped.....	20,000
					24	Bottle capped.....	10,000
May.....	59	Type A..... Continuous	150	75	1225	Raw.....	1,700,000
					1226	Pasteurized and cooled.....	11,000
					1227	Bottle uncapped.....	150,000
					1229	Bottle capped.....	148,000

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

MONTH	No. of Plant	Type of Pasteurizer	TEMPERATURE		SAMPLES TESTED		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
July.....	59	Type A..... Continuous	150	75	1760	Raw.....	10,200,000
					1761	Pasteurized and cooled.....	128,000
					1762	Bottle filler.....	90,000
					1763	Bottle uncapped.....	106,000
					1764	Bottle capped.....	106,000
August..	60	Type B..... Continuous	166	43	2933	Raw.....	20,000,000
					2934	Pasteurized 166° F.....	185,000
					2935	Pasteurized cooler 43° F.....	71,000
					2936	Pasteurized bottle filler.....	72,000
					2937	Bottle uncapped.....	860,000
					2938	Bottle capped.....	950,000
March...	61	Type A..... Continuous	158	45	687	Raw.....	160,000
					688	Pasteurized.....	55,000
					690	Bottling machine.....	224,000
					691	Bottled.....	350,000
January	62	Type F..... Continuous	155–160	45	268	Raw.....Con	taminated
					269	Pasteurized 155°-160° F.....	30,000
					270	From cooler 45° F.....	35,000
					271	Capped bottle.....	300,000
July.....	62	Type F..... Continuous	156	44	1466	Raw.....	16 000,000
					1467	Raw separator.....	25,000,000
					1468	Pasteurized 156° F.....	42,000
					1469	Cooled.....	25,500
					1471	Bottler 44° F.....	48,000
					1472	Bottle uncapped.....	60,000
					1473	Bottle capped.....	52,000
April....	63	Type B..... Continuous	164	50	860	Raw.....	5,000,000
					861	Pasteurized.....	70,000
					862	Bottle uncapped.....	76,000
					863	Bottle capped.....	117,000
August..	64	Type F..... Continuous	160	48	2993	Raw.....	19,500,000
					2994	Machine 160° F.....	12,300,000
					2995	Cooler 48° F.....	130,000
					2996	Bottler.....	121,000
					2997	Bottle before capping.....	147,000
					2998	Bottle after capping.....	150,000
January	65	Type B..... Continuous	165	45	36	Raw.....	51,000
					37	Past. at outlet of mach 165° F	200
					39	Past. at outlet of mach. 165° F	2,000
					38	Cooled 45° F.....	14,000
					40	Cooled.....	600
					42	Bottling machine.....	4,500
					43	Bottle capped.....	3,800
August..	66	Type E..... Held 20 min.	143	..	2999	Raw.....	21,000,000
					3000	Pasteurized 143° F.....	56,000
					3001	Held 20 minutes, less than..	1,000
					3003	Bottle filler.....	18,000
					3004	Bottle uncapped.....	16,800
					3005	Bottle capped.....	17,900
Feb.....	67	Type B..... Continuous	167	60	461	Raw.....	2,250,000
					462	.....	2,980 000
					463	Outlet of pasteurizer	4,000
					464	Outlet of pasteurizer.....	3,400
					465	Cooler	17,200
					466	Cooler.....	11,500
					467	Bottled.....	43,500
					468	Bottled.....	32,900

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EFFICIENCY TESTS OF PASTEURIZING PLANTS: 1910—*Continued.*

Month	No. of Plant	Type of Pasteurizer	Temperature		Samples Tested		Bacterial Count
			High	Cooled	Serial No.	Kind, or taken at what stage of operation	
			° Fahr.	° Fahr.			
May.....	67	Type B..... Continuous	167	68-35	1160	Raw.....	475,000
					1161	Past. and cooled 167°-68° F.	3,600
					1162	Bottler 35° F.....	36,000
					1163	Bottle uncapped.....	11,000
					1164	Bottle capped.....	11,000
October	68	Type A..... Continuous	170	.	4545	Raw.....	20,000,000
					4546	Machine 170° F.....	less than 2000
					4547	Bottler.....	20,000
					4548	Trough of cooler.....	6,200
					4549	Bottle before capping.....	37,000
					4550	Bottle after capping.....	120,000
October	67	Type A..... Continuous	172	..	4370	Raw.....	85,000,000
					4371	Machine at 172° F.....	less than 2000
					4372	Cooler.....	
					4373	Eight gal. can after cooling.	13,000
					4374	Bottle before capping.....	2,500,000
					4375	Bottle after capping.....	7,000,000

PASTEURIZING MACHINES

Type A—A jacketed cylinder. Milk flows in at bottom upward through center of cylinder and out at top. The jacket is filled with live steam.

Type B—A hollow cylinder with metal core. Milk flows in at bottom upward in a thin stream between the core and jacket, and out at top. Heat is applied from outer jacket.

Type C—Resembles type B except that milk flows upward in the spiral groove.

Type D—Milk flows straight down over a heated cone.

Type E—Milk flows down in a spiral groove over a heated cone.

Type F—A long trough in which hollow revolving disks are set at right angles to axis and trough. Disks are filled with steam. Milk flows along trough and is retarded by the disks.

Holding device may be attached to any of the above types.

Type G—A trough similar to type F, containing one hollow disk set at right angles which moves back and forth longitudinally. Milk is poured in from the top and is drawn off from the bottom at one end. The disk is filled successively with steam, tap water and ice water. The machine is a combined heating, holding and cooling device.

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REPORT OF

BUREAU OF FOOD INSPECTION

BENJ. PERRY, M. D.
Chief Food Inspector

B. E. SHERMAN, LL.B., M.D.V.
Assistant Chief Food Inspector

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BUREAU OF FOOD INSPECTION.

Tuberculin Testing.

The ordinance requires the testing by tuberculin once yearly of all cows furnishing milk to Chicago; this in the event that such milk is not pasteurized. There are approximately 120,000 cows whose product enters this city's dairy supply, but inasmuch as seventy-five per cent of the milk consumed here is pasteurized at the present time and the remaining twenty-five per cent is raw, it is required only that the cows from which this raw product is obtained be tested. This means that about one-quarter of the total number of cows, or 30,000, must be submitted for test each year. These animals are scattered throughout the dairy field, the larger percentage, however, being located in Indiana and Wisconsin, the rest in Illinois.

Several months ago, special arrangements were entered into between the Chicago Health Department and the State veterinarians of Wisconsin, Indiana and Illinois, whereby all testing done in those States on the herds whose product was to be consigned to the Chicago market was to be of a quasi-official character; that is to say, it was agreed that:

Each State veterinarian was to take direct supervision of all testing done in his State;

The rules governing the application of the test would be such rules as were satisfactory to and approved by him.

A written application for administration of the test to a herd would have to be made directly to the State veterinarian of his State by the farmer owning the herd;

A record of all such applications would be sent from time to time to the food bureau by the State veterinarian receiving them;

The test itself to be made only by such veterinarians as were deputized by the State veterinarian and whose work would receive his official signature;

The method of disposition of all reacting animals would be dependent upon the law of the State in which the diseased animal existed, provided, however, that under no circumstances would the milk from such animal be allowed to be shipped to Chicago for distribution in its raw state;

Certificates of test covering each herd tested, officially O. K.'d by the State veterinarian under whose jurisdiction the test was made, would be sent to the office of the food bureau;

No deputized veterinarian would be allowed to test cattle outside of the county in which he resided without special permission from his State veterinarian;

In no event would the food bureau accept test certificates from any veterinarian who was not specially deputized and whose work did not bear the official signature of his State veterinarian.

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The foregoing arrangement is expected to accomplish the following results:

1. A more uniform method of testing.
2. The elimination of dishonest methods in the application of the test.
3. The official recognition by the proper State authority of all reacting animals.
4. In the majority of instances the slaughter of reacting animals and the marking with an indestructible punch mark for permanent identification of all cows not slaughtered.

The sum of these things means a more certain and rapid elimination of tubercular cows from our dairy fields than could be expected under the old system.

To satisfactorily enforce this tuberculin testing, it was necessary that each individual concerned should know exactly what the Chicago milk ordinance requires, consequently the entire field of production and distribution, that is to say, the farmers and the dealers, were circularized as follows: A general circular was mailed to all farmers who produce raw milk for the Chicago market. A general circular was mailed to all Chicago dealers who were handling raw milk intended for the Chicago consumer. Public notice was given to all parties in an article published by the food bureau in the weekly Bulletin issued by the Department, under date of December 17, 1910.

After the tuberculin test is made and the tuberculin certificates have been received at the office of the food bureau, the tests and certificates are recorded in the following manner:

All the certificates, as soon as they come into the office, are turned over to a reviewing clerk for counting and detailed examination. A complete set of dairy records is kept in the office showing the name of the owner and the address of every farm upon which milk is produced for Chicago. These records contain reports which are submitted from time to time by the dairy inspectors in the field, and these reports show, with other things, the number of dairy cows which each milk producer owns. As each bundle of tuberculin certificates comes in and is O. K.'d by the reviewing clerk, it is credited to the particular farmer whose name and address the certificates bear. Each individual certificate having been previously counted, the number is then compared with the number of cows the record shows the farmer to possess; and, if the two counts balhe certificates are then placed in the same filing pocket with rmer's record and a special steel signal is placed upon the to indicate that the certificates are within; a single glance dairy files thus enables anyone interested to determine whether not a particular farmer has tested all his cows.

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In addition, the food bureau also has a complete set of milk files with records and reports upon every milk dealer in Chicago. These records show among other things whether the dealer is handling pasteurized or raw milk, and also show the names and addresses of all farmers from whom the dealer's milk is received. If these milk files indicate that a dealer is handling raw milk, the names and addresses of the shippers in each case are copied, reference being then made to the dairy files mentioned heretofore, and the information obtained as to whether or not the milk supply of any certain dealer is from tested cows. If the records show that all the farmers or any one or more of them shipping to any certain dealer have not been tested, the dealer is immediately notified that his entire milk supply must be treated as untested milk and that he must pasteurize the product or have his farmers complete the test at once.

In keeping the record of all reacting animals it is only necessary that a check be maintained by the food bureau on those found to be tubercular in Illinois, inasmuch as all those found in the States of Indiana and Wisconsin are immediately removed and slaughtered as required by the State law of those States. In Illinois, however, the law makes no such provision for the slaughter of reacting cattle; instead, all such are punched in the right ear with a letter "T", one by one and one-half inches in size. Cattle so marked are immediately reported to the food bureau by the State veterinarian, and the dairy inspector in the territory in which such cows are reported as being located is then sent to the farm where they are found and gives orders for the immediate removal of such animals from the herd.

In the event that a producer refuses to test his cows, or, having tested, refuses to dispose of reacting animals, the entire milk supply of his dairy is barred from the Chicago market, this action being known as a "shut off." This "shut off" order is enforced by a milk platform inspector who is previously given all necessary information, including the name and address of the offending farmer, the name of the railroad over which his milk product is shipped to the city, the location of the city milk platform at which the milk is unloaded, the time of the arrival of the train at such platform, the name and address of the consignee, the number of cans ordinarily shipped, and the grounds on which the "shut off" order is based. This inspector, whose duty it is to know the location of every milk unloading platform in his district, proceeds to the platform given him as the destination of the milk to be held, meets the train, identifies each can of milk, tags it with a condemnation tag furnished for the purpose, immediately reloads the whole consignment on the milk train, and thus has it returned to the point of shipment. If milk from a dealer who has not complied with the order is shipped a second time, it is summarily dumped into the sewer. This method of procedure is carried out until the dairy man against whom the

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order is issued either finds a new market for his product or complies with the rules of the food bureau. In the latter event, he is given a written and formal release, with permission to continue shipments to Chicago. A record of all "shut offs" is kept in a book designated for that purpose.

Pasteurization.

The food inspection bureau is charged with the responsibility of enforcing the milk ordinances, which require the pasteurization of all milk which is not from tuberculin tested cows. In establishing a pasteurizing standard, the Health Department has adopted the following:

Rules Regulating the Pasteurizing of Milk and Milk Products.

The following rules shall regulate the pasteurizing of milk and milk products which are offered for sale, exposed for sale or kept with the intention of selling within the City of Chicago, after January 1, 1909:

Rule 1. Milk and Skimmed Milk: Milk and skimmed milk shall not contain more than 100,000 bacteria per cubic centimeter from May 1 to September 30, and not over 50,000 bacteria per cubic centimeter between October 1 and April 30.

Rule 2. Cream and Ice Cream: Cream and ice cream shall not contain more than 200,000 bacteria per cubic centimeter from May 1 to September 30, and not over 100,000 bacteria per cubic centimeter between October 1 and April 30.

Rule 3. Milk, Skimmed Milk, Buttermilk, Cream and Ice Cream: An original package of pasteurized milk, skimmed milk, buttermilk, cream or ice cream, exposed to the temperature of a room for forty-eight hours and stoppered with a sterile cotton plug, shall not show evidences of putrefaction, after being so exposed.

Rule 4. Skimmed Milk and Ice Cream: Skimmed milk and ice cream shall give a negative test when treated in the following manner: To five cubic centimeters of the pasteurized product and two drops of a two per cent solution of paraphenylenediamin, and one drop of a two per cent solution of hydrogen peroxide, and agitate. Not more than a tinge of blue shall be obtained by this test within thirty seconds after mixing.

Rule 5. Butter: Butter shall respond to the following test: Twenty-five grams of pasteurized butter is placed in a small beaker and heated by being placed in water at 60 degrees centigrade. The clean butter fat is then poured off and the remaining liquid diluted with an equal volume of water. The mixture thus obtained is then treated with two drops of a two per cent solution of paraphenylenediamin and one drop of a solution of two per cent hydrogen peroxid. When thus treated not more than a perceptible blue color shall be obtained within thirty seconds after mixing.

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Rule 6. Pasteurizing Temperatures: All pasteurized milk, cream, skimmed milk, milk products, and milk and cream used in the production of milk products shall be pasteurized in accordance with the following regulations:

(A) Continuous Pasteurization. In all continuous pasteurization the milk and cream shall be heated to a temperature (which temperature shall be determined and fixed by the Department of Health for each machine) sufficient to kill ninety-nine per cent of the total bacterial content and all of the pathogenic bacteria which may be contained in the raw product. For this determination of temperature, ordinary raw milk containing in the neighborhood of 3,000,000 bacteria per cubic centimeter shall be used, the pasteurized product being taken for test as it flows from the cooling apparatus.

All continuous pasteurizers shall be equipped with a feeding pipe so constructed that the pasteurizer cannot be fed in excess of its normal working capacity; that is, in excess of the working capacity of the machine at which ninety-nine per cent of the bacteria are killed when the required amount of heat is applied.

All continuous pasteurizers operated outside of the city limits, for the production of pasteurized milk and milk products to be sold in the city of Chicago, shall be equipped with an apparatus automatically regulating the supply of steam and heat, so as to correspond with and produce the required temperature of the outflow of the pasteurized product. These automatic thermo-regulators shall be accurate and must be approved by the Commissioner of Health before being installed.

A recording apparatus shall be installed upon all continuous pasteurizers operated within the city limits, so as to record during operation the temperature of the pasteurized product as it flows from the heater. The thermometer of this recording apparatus must be accurate and kept immersed in the milk in such a way that it is not exposed to escaping steam or other heat, excepting the heated milk. The records made by this recording thermometer must be accurate and made in a chamber which is kept under lock and key, the latter being under the control of the Department of Health. The automatic thermo-regulating and recording apparatus may be combined in one instrument. It is recommended that all pasteurizers be equipped with both appliances or with the combination instrument.

(B) Held Pasteurization. Whenever milk is held during pasteurization in such a manner that the process of pasteurizing is not a continuous one, namely, a continuous flow of milk through the heating or heat retaining chamber, the process shall be designated as "Held Pasteurization." Such methods of pasteurization employed and kinds of pasteurization appliances or systems installed and used shall be examined by the Commissioner of Health, or his duly

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appointed representatives, and shall be approved when all of the following requirements are fulfilled:

1. When the pasteurized product shows that over ninety-nine per cent of the bacteria and all pathogenic bacteria contained in the raw product have been destroyed.

2. When the mechanism of the pasteurizer or pasteurizing system is such that the three important elements, namely, the temperature, time of exposure, and the quantity of milk exposed at one time, can be readily kept under control and observation by the Department of Health.

3. When the following conditions are complied with: A uniform heating of 140 degrees Fahrenheit maintained for 20 minutes; 150 degrees Fahrenheit maintained for 15 minutes; 155 degrees Fahrenheit maintained for 5 minutes; 160 degrees Fahrenheit maintained for 1½ minutes; 165 degrees Fahrenheit maintained for 1 minute.

The time shall be calculated from the period that the entire quantity reaches the required temperature.

Rule 7. Cooling Temperatures: The pasteurized product shall be cooled at once to a temperature of forty-five degrees Fahrenheit or less. This cooling shall be so conducted that the pasteurized product is not exposed to the air or other contamination. The cooling apparatus shall be so constructed that it can be readily cleansed and sterilized.

Approximately seventy-five per cent of all Chicago milk is now subjected to this heating process. This means that there are in operation daily about two hundred and fifty pasteurizing plants, one hundred and fifty of which are located within the limits of Chicago and one hundred scattered throughout the country dairy district.

The pasteurizing machines are of widely varying types and capacities. There are, however, two general kinds used, namely: one which is known as the "continuous" tvpe, where the flow of milk through the machine in operation is uninterrupted, this being the commonest kind; the other known as the "held" type, a machine having a holding device or retarder into which the heated milk is conveyed and held for a definite length of time.

The capacities of the various machines range from a few hundred to several thousand pounds per hour. As the type and capacity of the machines vary, so does the temperature vary at which each one can be efficiently operated. Some makes require one temperature, other makes another. In fact, there is often a different degree of heat required to satisfactorily run individual machines of the same manufacture, this being dependent upon the manner in which the machine is fed. All this variation in machine operation, together with the fact that there always exists a tendency to rush the process,

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means that the matter of maintaining proper supervision of the pasteurizing process as a whole is a most important problem.

In order to supervise this portion of the general work, the food bureau has a set of index files showing the location of every pasteurizing plant through which any portion of the Chicago milk supply is run. The name of the farm or individual owning a plant is also recorded in these files, together with the amount of milk handled daily, where the milk comes from, and where it is going for distribution. The files also show the type of machine used, its capacity and the temperature at which it must be operated to do efficient pasteurizing. In addition to this data, score card reports covering the general cleanliness of each place are also filed with these records.

Inspectors have been assigned to visit and inspect all pasteurizing plants. They make inspections at very frequent intervals, and unannounced. The inspectors look into all details of the methods employed in each place, examine the equipment, and note the sanitary conditions of the entire premises. All details are reported by him in writing, using a special form of report and score card for this purpose.

HEALTHGRAMS.
From *The Bulletin.*

"No spit—no consumption."

* * *

Closed windows are open avenues to consumption.

* * *

So long as consumptives expectorate in public places you may expect a rate from consumption.

* * *

The Civil War killed 205,070 Americans in four years; consumption kills 800,000 in the same length of time. If "war is hell," what is consumption?

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INSPECTION OF CREAMERIES. **DEPARTMENT OF HEALTH, CHICAGO, ILL.** Date .....191.....

Creamery of.....Address.....Supt.....

Shipments to Customers: via ..... R. R.
Name ..... } ..... Milk
Address ..... } ..... Cream
Name ..... } ..... Milk
Address ..... } ..... Cream

Shipments leave at.....M.
Arrive at .....M. ....Chicago
Also make Butter, Cheese, Condensed Milk, Casein—Milk Sugar
No. of Patrons ..... Deliver at.....M.

1. Do you make regular inspection of the dairies.....
2. Is a semi-monthly statement of Contagious Diseases on file from farmers .....
3. Are all cows supplying milk tuberculin tested.....
4. Are factory employees examined for Contagious Diseases .....
5. Has the water and ice supply been examined.....
   Sample No..... taken from shallow well .....
   feet deep. Located.....ft. from outhouse; .....
   ft. from cess pool. Results: Chemical .....
   Bact..... Ice Sample .....
6. What make of Past. is used.....
7. What is the capacity..... .....per hour
8. To what temp. is milk heated .....
9. What is time of exposure .....
10. How soon is Pasteurized product cooled .....
11. To what Temp. is it cooled.....
12. Are the Temp. records on file .....
13. Give the average temp. as recorded .....
14. Give instances of low temp. recorded.....
15. Give personal observations of Past. temp. .....

(CREAMERY INSPECTION BLANK.)

Remarks:.....

Suggestions.....

Re-inspection date.....Orders complied with.. .....Except.....Written to.....
Yes No

Signed.....(Initials)
Food Inspector

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(REVERSE OF BLANK.)

SANITARY INSPECTION OF CREAMERIES.

EQUIPMENT.	SCORE. Perfect.	Allowed
LOCATION.	10	....
Surroundings: clean 3, grass covered 1	4	
No open privies nearer than 300 ft.	6	
CONSTRUCTION.	15	
Floor: iron plate 4, cement 3, tile or brick 2, wood 1	4	
Floor free from defects	2	
Walls and Ceiling: tile, cement, enameled metal and en. wood	4	
Plaster 1, rough wood 0.		
Walls free from defects	2	
Fly screens on hand	3	
SANITATION.	15	....
Light: window area 15% of floor space	4	
Ventilation: working system 6 windows 3.	6	
Drainage: ample 1, trapped 2, to 300 ft. away 2	5	
PASTEURIZER AND COOLER.	15	....
Process: held 4, continuous 3	4	
Feed: regulated and fixed	2	
Automatic thermo-regulator	3	
Auto. thermo register	3	
Easily cleaned and little piping	3	
(If no pasteurizer and cows are all tested, allow 15.)		
SEPARATORS AND FILTERS.	3	....
Easily cleaned	3	
BOTTLE FILLER.	5	....
Automatic 5, hand 3	5	
BOTTLE WASHER.	5	....
Machine 5, hand 4	5	
OTHER UTENSILS	5	....
Smooth and well plated	3	
Free from rust and defects	2	
MILK PUMPS AND PIPES.	10	....
Joints: all crosses 6, others readily taken apart 3	6	
Smooth inner surface and plated.	4	
WATER AND ICE SUPPLY.	10	....
Water: from deep well 5, spring 4, city main 3, running stream 2	5	
Ice: artificial 5, natural 3. (Allow 5 if water or ice supply has been examined and passed by Dept.)	5	
DRESSING ROOM.	7	....
Hot and cold water	2	
Sanitary lavatory, soap and towels	2	
Uniform working suits and caps.	3	
Total	100	....

METHODS.	SCORE. Perfect.	Allowed
BUILDINGS.	25	....
Cleanliness:		
Walls—painted 1, clean 2	3	
Ceilings " 1, " 2	3	
Floors, including corners	4	
Windows, including ledges	2	
Ledges, free from dust	2	
Free from flies	8	
Free from odor	3	
APPARATUS.	25	....
Cleanliness:		
Pasteurizer and cooler	5	
Separators and filters	5	
Bottle fillers	5	
Bottle washers	2	
Bottle rinsing tubs	4	
Weighing and receiving vats	2	
Pumps and pipes	2	
(Deduct 10 points from score allowed if any of the utensils are not sterilized.)		
CONTAINERS.	20	....
Bottles:		
Well soaked and washed	3	
Rinsed in running water and drained	3	
Sterilized—live steam 10, dry 10, heat 8.		
Shipping crates washed	2	
Farmers' cans rinsed and washed	2	
(Deduct 10 points if farmers' cans are not thoroughly cleansed and sterilized.)		
HANDLING OF MILK.	10	....
Protection from dust and flies:		
Covered vats	4	
Covered aerators and coolers	4	
Bottle caps protected	2	
COOLING AND STORAGE.	10	....
Below 50 F	10	
From 51 F. to 55 F	8	
From 56 F. to 60 F	4	
Above 60 F	0	
EMPLOYES (While Handling Milk).	10	....
Clothing clean	4	
Hands clean	4	
Hands free from sores	2	
(Deduct 5 points from score allowed for smoking or expectorating in workroom.)		
Total	100	....

Score of equipment..... Multiplied by 1=.....

Score of methods..... Multiplied by 2=.....

Total..... Divided by 3=..... Final score.

Signed..... (in full)
Food Inspector.

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This written report is turned in to the food bureau and is filed with a reviewing clerk whose duty it is to note all insanitary conditions, faulty methods, or insufficient equipment reported. Immediate written notification is then sent to the owners of the plant at fault, stating in detail the conditions which must be remedied within a definite period of time. At the expiration of the time allowed for such changes to be made, the score and report card is returned to the inspector for reinspection.

In addition to the inspection work the inspector also takes milk samples for chemical and bacteriologic examination.

In taking milk samples at a plant, duplicate samples are given the proprietor upon his request. In all such instances the proprietor receives what is known as a "duplicate milk stub" made out by the inspector, showing date the sample was taken; whether intended for chemical or bacteriologic examination, or both; hour taken; name and address of the plant; what part of the machine it was taken from, or at what stage of the handling process; temperature of the sample at the time taken; age of the milk; name and address of the producer. The original copy of this milk stub is turned in to the office of the food bureau.

All samples of bacteriologic examination are taken under aseptic conditions, each inspector being equipped with a special sterile sampling outfit. All such samples are immediately placed in small icing cans, carried for the purpose, and are delivered to the city laboratory within three hours after collection. Upon receiving them, the laboratory immediately prepares them for examination. As soon as the bacteriologic examination is completed the findings are promptly reported to the food bureau, where a comparison is made of the count for each sample for the purpose of determining where the apparatus at the pasteurizing plant may be defective or at what stage of the process contamination may have taken place.

The findings are then entered upon the original milk stub, previously mentioned, showing when, from whom, and at what stage of pasteurization the sample was taken.

When the proper pasteurizing temperature for a certain machine has been determined, the operator is advised of the necessity of maintaining that degree of heat throughout the process of pasteurization. The average length of time during which a pasteurizer is run is four hours each day. It is impossible with our present force to station an inspector at each plant daily during the time of the actual running of the machine, therefore control of the temperature at which pasteurization is done has been made possible by the Department rule which requires the installation of an automatic thermo-recording apparatus on each machine of the continuous type, which automatically records the date, time of beginning and ending of

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pasteurization, the temperature maintained throughout, showing every fluctuation. These records are removed daily from the recording apparatus and are placed on file at the plant, being subject to inspection by the food bureau or its representatives at any and all times. Plants of small capacity using the "held" type of machine, upon which thermo-recorders are not required by the rules, are regulated by making frequent bacteriologic counts of their milk, these counts being kept on record in the food bureau.

The rules also require the installation of automatic steam regulators on all pasteurizing machines located in the country. This apparatus acts as a heat controller, being similar to the governor on a stationary steam engine. These regulators are set to maintain evenly a degree of heat such as has been determined to be right for the machine to do efficient pasteurization. This apparatus is always made the subject of special attention by the inspector upon his visit to each place. In many of the larger pasteurizing plants both thermo-recorders and thermo-regulators are installed, being combined in one instrument. The food bureau encourages the equipment of machines with this combination apparatus whenever occasion presents itself, for the reason that it makes control not only easier for the bureau, but easier, more certain and more economical for the owner of the pasteurizing plant.

In the event that any written order is sent out by the food bureau to the proprietor of a pasteurizing plant (which order is based on some infringement of the departmental rules or milk ordinances), the inspector subsequently reporting that such order has not been carried out, steps are taken immediately either to institute a law suit against the offending party or to revoke his milk license. Law suit is also commenced against the proprietor of a plant whenever the bacterial content of his milk supply is found to be excessive on three consecutive days. This is determined from the pasteurizing files in which are entered records of all such excessive counts.

In a law suit instituted for repeated high counts where the samples upon which the suit is based were taken in milk stores out of the original sealed bottles as delivered by the dealer, the storekeeper is made a defendant jointly with the individual responsible for the pasteurization of the product. This is done for the purpose of meeting the possible defense plea of the dealer that the milk was up to standard when delivered by him to the storekeeper, and that the storekeeper must be held responsible for the high bacterial count because of not handling the product properly after delivery.

All these things combined make it possible for the food bureau to maintain that control over pasteurizing plants which is necessary to insure results such as are contemplated in the ordinance.

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Milk Inspection.

Method of Milk Distribution.—The city dealer meets the milk trains in the forenoon, usually from 9:30 to 11:30 a. m., receiving his supply from the country dairy in eight-gallon cans, which are loaded on trucks and driven to his depot, pasteurized, bottled and packed in ice as soon as possible, ready for distribution the following morning. His trade is divided as follows: Private or house trade, stores, restaurants, saloons and factories for noon-day lunches. With the exception of the milk delivered to restaurants, the supply is ninety-five per cent bottled.

Control of Milk Supply.—The milk dealer must first apply to the food bureau for a license to sell milk, giving his source of supply and stating whether the herds have passed the tuberculin test or whether the milk is pasteurized. The clerk then turns to the office files for his record, which will show the sanitary condition of the applicant's depot, also a record of samples taken during the past year. If his record is poor the license is withheld until he complies with the ordinance regulating the sale of milk.

The city is divided into ten districts with an inspector allotted to each. It is the duty of each inspector to make a systematic canvass of his district by streets, investigating all places where milk is sold or stored and filling out a score card for each place showing the amount of milk and cream sold, whether pasteurized or raw, and the source of supply; also the sanitary condition of the store or depot. Insanitary conditions are noted on the score card and verbal orders given by the inspector to the owner or tenant to remedy them, allowing such time as would seem necessary to make the change required. A written notice is also sent from the office notifying the dealer of the conditions reported by the inspector and ordering him to make such improvements as were suggested.

Samples of milk and cream are taken from each store or depot. The inspector selects a quart and a pint bottle of milk and a bottle of cream; after each has been thoroughly shaken and mixed, he takes out about two ounces of milk and one ounce of cream into small bottles, each labeled with a laboratory number. The attendant is given a receipt for the samples. These receipts are made in duplicate, the original being returned to the office for official record. On demand the inspector pays the dealer for the milk and cream taken.

In milk depots the inspector takes samples from the cans out of which the trade is being served, usually the one containing the dipper, noting on the milk stub or receipt the size of the can and approximate amount left in the can. The dealer complains if the amount in the can is low but the rule with the inspector is that if good enough to sell, it is good enough to sample. The inspector sees that the attendant and employes, working around a milk depot where milk is being bottled and more or less exposed, wear clean clothing and have clean hands, also that the place is properly equipped with steam or plenty of hot water for washing and sterilizing all bottles and utensils. Inspectors must also inquire as

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to the health of the employe's and dealer's families, especially with reference to the presence of contagious or infectious diseases.

In a space on the score card reserved for the purpose the inspector writes the name and address of each country shipper, showing the source of supply, the railroad over which shipped and the location of city platform. These score cards are kept on file in the office, making a complete record of all the milk shipped into the city and the dealer who receives it.

Certain inspectors are detailed to platform work, meeting the milk trains, taking samples from shipments of milk arriving directly from the country. This is done as an aid in placing the responsibility, as between the dairyman or the milk dealer, for any tampering with the milk, such as skimming or watering, that may have been previously discovered in the depot or retail delivery samples collected by the district inspectors. At the platform, the inspector looks for old, worn-out and rusty cans unfit for further use, condemning them by puncturing or chopping to pieces, so that their further use in the shipping of milk is impossible.

The Department has lately inaugurated what is known as the filtration or sediment test by taking a pint of milk out of an eight-gallon can from each shipper and straining it through a small pad of cotton. When dry, the cotton is then pasted on a sheet of white paper and labeled with the shipper's name and address. This test has proven very effective in exposing the dirty, slovenly methods of some country dairymen.

Dairy Inspection.

The dairy field supplying milk to the Chicago market is scattered over seventeen counties located in three different States, Wisconsin, Indiana and Illinois. In this field are located 12,000 dairy farms, with approximately 120,000 milk cows, which the food inspection bureau is charged with the responsibility of supervising. To this field are assigned six dairy inspectors, each of whom has charge of an entire county at a time for the purpose of giving each individual farm a thorough inspection. These inspectors remain in the field from one month's end to another, reporting in person at the office of the food bureau only when occasion may require.

Upon being assigned his district, it is left entirely to the discretion of the inspector, under ordinary circumstances, to select the portion of the territory in which to commence his work. After making his selection, he immediately inquires throughout the community for information as to the location of creameries, bottling plants, skimming stations, receiving stations and pasteurizing plants thereabout, also as to the names and addresses of all farmers who furnish such places with milk or such farmers as might be sending their product direct to a Chicago dealer. Inquiry is also made among physicians, druggists, and business men in the neighboring towns and villages concerning the existence of infectious disease in the surrounding country, towns or villages.

The inspector having obtained the names and addresses of the farmers whose dairy products are intended for the Chicago consumer, immediately begins to make a personal visit to each farm for the purpose

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of inspection. Upon arrival at the farm he ascertains the full name and address of the tenant of the premises, also of the owner, the name and address of the consignee of the milk produced, whether such consignee is a city dealer, a country creamery or a bottling plant; if a city dealer, information is also obtained as to the name of the railroad over which the product is shipped and the number of cans shipped daily. After having obtained this information, the regular routine of inspection is commenced, which includes an inquiry into the health of the dairyman's family and hired help, a thorough investigation into the health and cleanliness of the cows on the farm, and whether such cows have been subjected to a tuberculin test or not. Notation is made also as to the character of the pasture upon which the cattle graze. Next the barn is inspected as to its structure, equipment, and sanitation, and at the same time the location, cleanliness and drainage of the surrounding cow-yard is taken into consideration. The water supply of the dairy is closely looked into in order to determine its purity and the likelihood of any contamination from its surroundings; notation is made as to whether this water supply comes from rivers, creeks, ponds, springs or wells, and if wells, whether dug, drilled, cased, shallow or of great depth. If from rivers, creeks, ponds or springs, whether there is any contamination from sewage, offal, or refuse of any character which would tend to make the supply impure. The milk house is next visited and its structure, location, equipment and general sanitary condition carefully noted.

It is the aim of the inspector at all times to make an inspection at the milking hour if possible, in order to determine the character of the methods employed at each dairy. When present at such an hour careful observation is made as to the cleanliness of the cows and of the dairy attendants, also of the stable surroundings, and the utensils used at the time of milking. Notation is made as to the length of time which expires between milking and cooling, and whether the milk is properly protected on its way from the farm to point of shipment.

Each inspector is equipped with a high-grade kodak for the purpose of photographing any unusual thing or condition which he finds on or about a dairy and which might have some influence on the general healthfulness or cleanliness of the milk. A notation is made on the back of each picture, explaining its application and the picture is then sent into the office for permanent record.

The inspector makes a complete and detailed report of his findings upon each place on a score card which he carries for the purpose. This score card is mailed to the food bureau where it is turned over to a reviewing clerk, who carefully notes the suggestions and orders made by the inspector for changes in methods or equipment of the dairy, and sends out to the farmer occupying the premises a written notice of the changes required if he wishes to continue supplying the Chicago market, giving him a definite time in which to make such changes. After the time in which to make these changes has expired, the card is returned to the inspector for a reinspection of the dairy in order to determine whether or not the

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orders of the bureau have been complied with. If he finds that they have not, he so reports and the milk from the farm in question is immediately barred from Chicago. If the orders have been complied with, the dairy card is returned by the inspector with such notation thereon and filed in the records.

In the office of the food bureau is a complete set of dairy files which contain all the necessary information as to location, name of owner or occupant, character of equipment and methods used, and amount of milk produced upon each farm shipping to the city. In addition, a book record known as a "shut off record" is kept, in which is entered the name and address of all farmers whose milk has been excluded from Chicago, the date on which the order went into effect, a memorandum of the grounds upon which the order was based, the name of the consignee, the name of the inspector making the inspection and the date the farm was released. These office dairy records are supplemented by maps of each county made by the inspector having jurisdiction, which maps show in detail all roads, streams, lakes, marshes, shallow-dug wells, towns, shipping stations, railroads, farms, condensing and bottling factories, skimming stations, creameries and cheese factories.

Whenever a "shut off" order is issued against a dairy farm the order is enforced by a city milk-platform inspector who is first furnished with full information as to the name and address of the shipper, the amount of milk shipped daily, the railroad over which the shipment is made, the city milk platform at which it is unloaded, the name and address of the consignee, and the reasons for which the shut-off order was made. Being armed with this information, he proceeds to the milk platform in question, seizes the milk as it is unloaded, places a condemnation tag upon each can, and forthwith reloads it on the milk train and has it returned to the shipper. Should a shipper persist in sending in his milk in violation of the orders of the food bureau, the milk is then seized and dumped into the sewer.

In addition to the inspection of dairies, inspection is also made of all creameries and bottling plants in the country by an inspector especially assigned for that purpose. The equipment and methods found in use at these places is scored and reported upon, the inspector using for that purpose a special score card. Milk or dairy products from these creameries and bottling plants is barred from the city for the same reasons and in the same way as from dairy farms.

The food bureau has instituted recently a new method of milk testing, known as the sediment test, this test being made upon the milk of every farmer producing for the Chicago market. The technique is as follows: A pint of milk is taken, thoroughly shaken and filtered through a piece of absorbent cotton about the size of a twenty-five-cent piece all the gross dirt which may be in the milk remaining upon the cotton after the milk has passed through. These cotton specimens are then mounted upon a permanent card record which contains information as to the name and address of the farmer from whose milk the sample was taken, the

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date of the sample, the location at which the sample was taken, and the grade under which the sample has been placed, all such samples being graded into three groups—good, fair and bad. It is a well-known fact that from a dirty bakery one has reason to expect dirty bread and so from a dirty farm where the methods of production are loose, dirty milk can be reasonably expected, and it is to indicate in a definite way where these dirty farms are located that the sediment samples are taken and kept of record. When a sediment sample indicates that the methods on a farm are of such a nature as to contaminate the milk supply, immediate investigation is made of that place by an inspector.

The Inspection of Abattoirs.

The inspection of animals slaughtered in abattoirs not under government inspection is done by the inspectors of the food bureau of the Department of Health.

The procedure of inspection is the same as in the larger packing plants and in most cases the rules and regulations of the Bureau of Animal Industry, Order 150, are observed, although in some cases the scientific knowledge of the individual inspector gives the vital decision. Each house has two inspectors and there is a supervising inspector who visits all the houses under city inspection, looks after the tankage of all condemned animals and in cases of doubt, after consulting with the other inspectors, makes the final decision.

Animals are inspected before and after slaughtering. The commercial slaughtering of animals begins with the killing, which is usually carried out by bleeding. The bleeding is done as thoroughly as possible, as the amount of blood in the meat influences its keeping qualities. For humanitarian reasons, the withdrawal of blood is always preceded by stunning the animal, this being done in almost all cases, the exception being those slaughtered in accordance with the Jewish rite. Under the Jewish rite, the animal is secured and thrown; the throat is then cut with a very sharp knife by a rabbi especially appointed for this purpose. After the animals are dead they are partly skinned while on the floor; this is followed by the removal of the feet at the carpal and tarsal joints, and of the head. The inspector examines thoroughly the maxillary glands, bones and tongue to see if they are diseased. After the animal has been hoisted and the carcass eviscerated, the inspector palpates thoroughly the mesenteric and thoracic glands, lungs, spleen, liver and other viscera. If the carcass and parts thereof are found to be sound and fit for human food, they are passed and stamped.

Should any lesion of disease or other condition that would probably render the meat or any organ unfit for food purposes be found on post-mortem examination, such meat or organ is condemned and afterwards "tanked" by the inspector in charge.

Carcasses of all animals which are slaughtered and found at time of slaughter to be affected with any of the diseases or conditions named below are condemned; but owing to the fact that it is impracticable

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to formulate rules covering every case and to designate at just what stage a process becomes loathsome or disease noxious, the decision as to the disposition of all carcasses, parts, or organs not specifically covered by the below named regulations, is left to the inspector.

Carcasses or parts affected with the following diseases and conditions are condemned: Anthrax, blackleg, hemorrhagic-septicemia, pyemia and septicemia, rabies, tetanus, malignant epizootic catarrh, hog cholera and swine plague, actinomycosis or lumpy jaw, caseous lymphadenitis, tuberculosis, Texas fever, parasitic ictero-hematuria, mange or scab, tapeworm cysts, pneumonia, pleurisy, enteritis, peritonitis and metritis, icterus, uremia and sexual odor, urticaria, melanosis, bruises, abscesses, liver flukes, etc., emaciation and anemia, pregnancy and parturition, immaturity, careless scalding, dead animals.

In most of these diseases in which the carcasses are only slightly affected, the whole carcass is not condemned, only the affected parts.

Inspection Work at Depots and on Market Streets.

An inspector is stationed at each of the most important express depots in the city. These inspectors watch all express trains as they come in and are unloaded. All foodstuffs are carefully inspected and such as is found unfit for human food is released and allowed to go to the markets. When passed, all carcasses of hogs, sheep and beef are stamped "approved."

Anything found unfit for human food is tagged, the inspector covering the territory where such condemned stuff is sent is notified, and he saturates the carcass with kerosene or some other penetrating fluid so it cannot be used for human food. He then delivers such condemned foodstuff to the company which has contracted to remove it for destruction.

There are two inspectors covering the South Water Street market and one to cover the Fulton, West Randolph Street and all other west side wholesale markets. These men watch all foodstuffs coming to these markets, by continually visiting each house. They inspect, tag and stamp foodstuffs and also supervise the sanitary conditions of the markets, including the handling of all foodstuffs.

When the carcass of an animal is condemned for any disease, a specimen is submitted to the laboratory for analysis and confirmation of the judgment of the inspector making such condemnation.

The Inspection of Fish.

The inspection of fish by the Chicago Health Department is conducted along the following lines:

One fish inspector covers the entire city, most of his time being spent at cold storage houses and wholesale markets. He inspects all fish offered for sale, examining for spoiled condition and supervising storage in a clean and sanitary place. Often fish are spoiled before they reach the city, the cause being improper icing during transportation. Fish found in cold storage houses have usually been stored from one month to two years. They are prepared for storage

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by dipping them in water every three minutes, the freezing process following each dipping. When thoroughly frozen by this method they will keep for years.

The fish inspector also inspects fish in the Ghetto district, where live carp are offered for sale. These carp are kept in large tanks of water. Frequently fish die in the tanks, which makes it necessary to condemn them.

Oysters are inspected with reference to condition and proper icing, attention being also given to shipping conditions.

Fish which have been condemned are tagged and ordered held for removal by the concern having contract for the disposition of condemned foodstuffs.

Inspection, Condemnation and Disposal of Canned Goods.

The inspector assigned to canned goods inspection visits the various wholesale grocery houses within the city limits from one to three times weekly, as conditions require, more frequent visits being made when the Department is called upon for inspection by written request or telephone message.

The method of inspection recently adopted by agreement between the wholesale grocers and the commissioner of health consists of the following procedure:

Each wholesale house is provided with a separate retaining room for the storage, handling and disposition of "swells," "leakers" and other inferior grades of canned goods. On entering this room, the inspector makes note of the number of cans, the various brands and sizes, and the products contained therein; examines all defectives, such as "swells," "leakers," etc. After a thorough inspection is made, condemned slips are issued for all defective and unwholesome goods. These slips are turned over to the wholesaler, who in turn forwards them to the packer as official evidence of the condemnation and destruction of the goods therein specified.

By agreement between the wholesale grocer and packer, a six months' guarantee is given with each shipment of goods, indemnifying the wholesaler against loss from "swells" and "leakers," and all claims for loss must be made within that period. The wholesaler also issues a thirty or sixty-day guarantee to the retailer, and all "leakers," "swells" and inferior goods must be returned to the wholesaler within this time. On discovery of "leakers" and "swells," the packer is immediately notified that final disposition of such goods must be made within fifteen days. At the expiration of this time the Department of Health insists upon their removal and destruction.

The foregoing agreements do not apply to canned fish or meats; these products must be removed from the place in which they are stored and destroyed immediately.

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Samples of canned goods are frequently taken to the city laboratory for analysis when the inspector is in doubt as to their condition; this being done always where examination for ptomaines or corrosion is considered necessary.

As to condemnation and final disposition of canned goods, the inspector is instructed to issue a condemnation slip for each package, case or lot of canned goods condemned, after which a blanket certificate is issued for the purpose of enabling the Department to keep a perfect check on all condemned goods sent to the reduction company for destruction. All condemnation certificates are issued in triplicate form, the yellow slip being delivered to the packer of the goods by the broker or wholesaler in whose possession the goods are found, the white slip is retained by the Department and the tissue copy is held by the inspector. This applies in all cases, excepting where blanket certificates are issued to accompany condemned goods to loading station or reduction plant, in which case the white and yellow slips are sent with the condemned goods, the white slip being retained by the weighmaster at the loading station for checking purposes, later being forwarded to the Department of Health for filing.

On being delivered at the loading station, the goods are placed in steel receptacles provided for that purpose, and are kept there until loaded on the boat that conveys them to the reduction company at the Union stock yards. At the latter point they are taken to the crusher and the contents of the cans removed. After removal from the cans the contents are dried, all grease is extracted and the residue is treated so that it may be utilized for fertilizing purposes.

During the year 1910 the Department of Health condemned and ordered removed 743,487 pounds of canned vegetables, 297,990 pounds of canned fruits, 117,250 pounds of canned fish, 192,251 pounds of miscellaneous canned goods, making a total of 1,350,978 pounds. Naturally, the greater part of these canned goods was condemned during the summer months, for the reason that the increased temperature has a tendency to increase gaseous fermentation.

Inspection of Groceries and Markets.

The inspection of food products by the Chicago Health Department is conducted along the following lines:

The city is divided into districts and an inspector is assigned to each. It is the duty of the inspector to visit all places where food products are sold, stored or manufactured.

He inspects the food products offered for sale, examining them for decayed condition, to see that they are maintained at a proper distance above the floor or sidewalk, that cats and dogs cannot come

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in contact with them, and that foodstuffs which are eaten without washing are protected from flies.

Then an inspection is made as to the cleanliness of the store, to see that the floor and ceiling are clean and that no rubbish or decayed vegetable matter is allowed to accumulate. The interior of the ice box is inspected to see that it is constructed of material which can be kept clean, that the meat hooks are clean and not covered with rust, and that the drip pans are free from dirt.

An inspection of the sink is made to see that the waste pipe is properly connected with the sewer and provided with a trap and that the sink is composed of a material which can be kept in a sanitary condition, and that soap and towels are provided for the use of the employes.

The toilet room is examined for proper ventilation and sanitary condition.

An inspection of the basement is made to see that the floor is constructed of a material that can be kept in a sanitary condition and that rubbish is not allowed to accumulate. The yard is also inspected to see that it is free from refuse.

INSPECTION OF THE MANUFACTURING AND BOTTLING OF WATERS, CARBONATED WATERS, SYRUPS AND FLAVORING EXTRACTS.

Bottling Plants: An ordinance, passed July 6, 1909, requires that bottling plants shall operate under license, the yearly fee being fixed at twenty dollars. In addition to strict sanitary requirements, very similar to those regulating milk depots, the ordinance provides for a separate syrup room, properly screened against dust and flies. In the syrup room, the inspector looks after the purity of the water and the ingredients, sugar, saccharin, extracts and colors; also sees to it that soap-bark is not used in dangerous proportion. Percolators, kettles, containers and their covers, utensils, piping and faucets are carefully looked after.

In the bottle-washing department thoroughness is of the greatest importance. All bottles are required to be soaked in a caustic soda solution, those with outer stoppers are required to be thoroughly brushed, and those with inner stoppers to be carefully "shotted" with steel shot. We now require that all leaden stoppers be replaced by stoppers of tin. Any decomposing or dirty rubber parts must be renewed. All bottles are required to be thoroughly rinsed in fresh, clean, running water. If automatic rinsers are used, every jet is examined to see that all sides of the bottle interior are thoroughly flushed. Special care is insisted on in the cleaning of so-called clearing-house bottles. These are usually bottles collected by junk dealers from alleys and refuse piles or purchased by them from householders. They are almost invariably filled or coated with filth of all kinds or have been used as containers for liquids which

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are difficult to remove. All clearing-house bottles must be "sighted" after rinsing and returned to the soaking vat to go through the whole process as often as necessary to render them clean. The rubber attachment of their stoppers must, in every case, be renewed. The inspector sees to it that cleaned bottles are always inverted (neck down) in clean boxes till actually filled.

In the bottling department, the filter, the carbonator, the various filling machines, the syrupers, and the piping are carefully looked after. The filter must not be allowed to become a breeding place for bacteria, must be daily scraped and back-washed, if of stone or composition, or agitated and back-washed if the filtrant is sand, gravel, crushed stone or charcoal. Furthermore, it must be renewed or baked periodically. The carbonator and spider must be of correct construction and thoroughly flushed out before each day's run. The filler tables and filling machines are looked after as to cleanliness, especially the interior of syrup chambers and injectors, also the stopper bowl and contents. The syrupers, faucets, piping and strainers are examined with particular attention to the parts of syrup gauges, plungers, etc., where automatic syrupers are in use. Spring-stopper bottles of all sizes are ordered kept inverted at all times after filling till used, to prevent dust or other foreign matter gathering in the cup formed by the neck and stopper, as such accumulation must be knocked into the bottles before the contents can be consumed. Syphon bottles are required to be kept clean, and the syphon heads must be free from leaden parts.

The product is examined for visible indications of unclean methods and for the presence of lead salts, the cause determined by the inspector, and the bottler instructed by him in ways of remedying the fault.

Soda Fountains: Though these are held not to be included under the licensing requirements in the ordinance of July 6, 1909, they are looked after as to cleanliness very much as are the bottling plants, so far as those regulations apply.

The parts of the fountain are scrutinized for evidences of unclean methods, for leaden parts that come in contact with charged water and for faulty construction. The fountain interior, syrup and fruit-juice containers, draft arms and connections, and steady stream attachments must be kept clean inside, as well as outside. The cooling system and drain must be kept free from accumulation of dirt and slime left by the ice. Crushed fruit bowls are looked after, both for cleanliness and covering.

Manufacture of Fountain Supplies: Under the ordinance of July 6, 1909, firms manufacturing fountain supplies are required to pay a license fee of twenty dollars per annum.

Their business is to charge water contained in portable tanks with carbonic acid gas and to prepare flavoring syrups and crushed fruits for use at soda dispensing fountains. So far as the regulations

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of bottling plants apply, they are enforced in these plants. Furthermore, the block-tin lining of the tanks is examined and the tanks required to be clean before refilling.

If fruit juices are manufactured, the presses, kettles and all utensils are inspected. The fruits must be clean, fresh and ripe. The sugar and other ingredients are examined. The use of chemical preservatives is prevented. The bleaching and coloring processes are investigated for possible harmful methods. Containers are required to be dry before filling, and sterilization must be effective.

Carbonic Acid Gas Factories: This is a gas with which various beverages are charged, in liquefied form, to make them effervescent. In Chicago it is gained from the fermentation of malt in breweries; by the decomposition of bicarbonate of soda with sulphuric acid; by the combustion of limestone, and, latterly, by the combustion of coke.

In addition to a general factory inspection, it is important here to see that the gas washing is thorough and adequate; that the water is renewed with sufficient frequency and that the gas washers are cleaned periodically. The drums in which the liquefied gas is sold must be examined for cleanliness and flaws before refilling.

Flavoring Extracts: Factories or laboratories for the manufacture of flavoring extracts are required to pay a license of twenty dollars per annum.

Aside from the requirement that the premises be maintained in a sanitary condition, it is necessary that an extract room be so separated from all outside influences that the delicate flavors may not become contaminated by dust or other impurities or affected by foreign odors. Cleanliness of everything which in any way comes in contact with the oils and extracts is, of course, imperative.

Ice Inspection.

The sale of ice is licensed in six-month periods at five dollars each period, for each depot or wagon operated. Two license plates must be attached to each wagon.

The ordinance distinguishes between ice for domestic use and ice for cooling purposes. Ice for domestic use cannot be cut from the Chicago River, the Calumet River, or any stagnant or polluted waters within the city limits. Rigid inspection has, in fact, eliminated that kind of ice for domestic use completely from the Chicago market. If ice is harvested elsewhere, or if it is manufactured, it must come up to a certain fixed standard of purity, chemically and bacteriologically. If sold as ice for cooling purposes—that is, for use in refrigerators or refrigerator cars in such manner that it cannot come in contact with foodstuffs or beverages—the person delivering must give the person receiving it a printed card bearing the words, "Ice for packing or cooling purposes only; not for domestic

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use," and the deliverer must take a receipt similarly worded. Wagons used in the delivery of ice for cooling purposes are not permitted to be used for the handling of ice for domestic use.

Natural Ice: Every body of water from which ice for domestic use in Chicago is harvested is visited annually by the Department inspectors. They map the surroundings accurately and determine if the water is contaminated by sewage, garbage, ashes, refuse from factories, etc., or if affected by injurious vegetable growths. All dwellings, privy vaults and factories on the slope toward the body of water and along its affluents are carefully noted, as also are cases of infectious disease that might be carried by water. The methods of harvesting, habits of the men employed, the scraping, the quantity cut from the top, the condition of the channel, inclines and runways all receive close attention. The ice houses must be correctly drained and the packing and covering must be clean and fresh. The aging of ice by sanitary storage is promoted as far as possible.

Ice cars must be thoroughly cleaned and made dust-proof before they are permitted to be loaded, and the packing or covering must be clean and fresh. Cars that have been used in carrying anything deleterious to health or which have a foul or noxious odor cannot be used.

The city ice depot must be properly floored, trap drained and ventilated. Both here and in the wagons cleanliness is mandatory. Attendants are not permitted to place ice for domestic use on dirty walks, streets or alleys, or to transport such ice through the streets or alleys without adequate protection from dust and sun. In washing the ice, only clean water may be used, and such water must be carried in clean, covered containers, and dipped out with clean dippers by clean, healthy attendants.

Artificial Ice: The ammonia compression system and the ammonia absorption system of cooling brine—to freeze distilled water in cans partially immersed in the brine—are the methods in general use in Chicago ice manufacturing plants.

The water supply must be approved by the Department. As the water frozen is the condensed exhaust steam from the engines that drive the ammonia compressors, one principal source of trouble is the cylinder oil which passes over with the vapor. This is removed in succession by an oil separator, a skimming tank, a series of charcoal filters, and paper pulp or blotter filters.

In spite of the best efforts of operators and inspectors, a brown core occasionally appears in a cake of ice, due to rusty pipes or to cylinder oil passing through the blotters when the water was not sufficiently cooled before reaching them. Ice of this character is then sold for cooling purposes only.

All piping and machinery is thoroughly overhauled at least once a year, or when the samples regularly taken by the inspector

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indicate the necessity for such action. The charcoal filters require frequent renewal, while the blotters of the International filters are closely watched and renewed several times a day. Skimmers and coolers must be protected from dust.

The partially immersed cans are covered with wooden covers, these serving as the floor of the freezing room. The inspector sees to it that workmen and others do not enter this room with soiled shoes, and that they are otherwise of cleanly habits; that the wooden covers are not laid with their bottoms on the tops of others when removed; that there are no drippings from overhead machinery into open cans. He sees that the "dipping" is done with care, so as not to submerge the can in dirty water, and that it is not dipped too long. The routine of artificial ice inspection is very similar to that for natural ice, being through the chutes, the drawing room, the storerooms, the shipping room, the platforms and the wagons, to see that it is nowhere exposed to contamination.

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CONDEMNATIONS OF MEATS AND OTHER FOODSTUFFS—1907 TO 1910 AT THE UNION STOCK YARDS AND ELSEWHERE IN CHICAGO.

FOODSTUFFS CONDEMNED	WHERE CONDEMNED	1907		1908		1909		1910	
		NUMBER	WEIGHT—LBS.	NUMBER	WEIGHT—LBS.	NUMBER	WEIGHT—LBS.	NUMBER	WEIGHT—LBS.
Beef	U. S. Yards	4,814	2,356,332	1,599	1,197,984	643	449,152	311	233,725
Beef	Elsewhere	.....	6,891	.....	.....	.....	.....	3	1,155
Veal	U. S. Yards	4,852	259,514	1,067	82,318	986	32,871	1,029	36,875
Veal	Elsewhere	1,457	84,446	2,497	135,379	2,083	115,047	1,114	70,601
Pork	U. S. Yards	5,184	966,431	2	160	.....	.....	.....	.....
Pork	Elsewhere	281	42,871	464	46,450	278	36,339	246	31,917
Sheep	U. S. Yards	1,348	74,615	183	7,519	153	9,832	127	7,931
Sheep	Elsewhere	84	3,695	59	2,733	44	2,976	52	2,620
Cut Meats and Viscera	U. S. Yards	.....	303,339	.....	49,087	.....	36,484	.....	19,422
Cut Meats and Viscera	Elsewhere	.....	37,067	.....	34,291	.....	36,544	.....	23,946
Poultry	U. S. Yards	.....	625	.....	.....	.....	.....	.....	.....
Poultry	Elsewhere	.....	88,246	.....	62,316	.....	35,494	.....	38,651
Fish	U. S. Yards	.....	125	.....	.....	.....	.....	.....	.....
Fish	Elsewhere	.....	586,030	.....	14,073	.....	187,820	.....	121,631
Fruit and Vegetables	U. S. Yards	.....	470	.....	.....	.....	.....	.....	.....
Fruit and Vegetables	Elsewhere	.....	550,832	.....	244,774	.....	914,752	.....	741,738
Canned Goods	Elsewhere	.....	838,574	.....	1,673,944	.....	1,631,155	.....	1,350,978
Game	Elsewhere	.....	.....	.....	34,372	.....	31,887	.....	2,663
Other Foods	U. S. Yards	.....	31,159	.....	.....	.....	.....	.....	215
Other Foods	Elsewhere	.....	15,253	.....	24,819	.....	26,538	.....	20,110
Totals	U. S. Yards	16,198	3,922,610	2,851	1,337,068	1,782	528,339	1,467	298,168
	Elsewhere	1,822	2,253,905	3,020	2,273,151	2,405	3,018,552	1,415	2,406,010
Grand Total	.....	18,020	6,246,515	5,871	3,610,219	4,187	3,542,891	2,882	2,704,178

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DIVISION OF MILK INSPECTION.

General Summary of important data for the years 1907-1910.

BUREAU OF FOOD INSPECTION.

MILK INSPECTION—CITY	1907	1908	1909	1910
Total samples milk and cream from all sources	60,688	63,984	41,853	34,739
Number found below grade	3,696	2,788	1,732	1,215
Per cent. found below grade	7.4	4.8	4.2	3.5
Samples taken in milk depots	.....	.....	13,958	12,151
Number found below grade	.....	.....	596	296
Per cent. found below grade	.....	.....	4.2	2.3
Samples taken in stores	.....	.....	11,260	11,166
Number found below grade	.....	.....	480	261
Per cent. found below grade	.....	.....	4.3	2.3
Samples taken from wagons	.....	.....	9,960	5,513
Number found below grade	.....	.....	292	54
Per cent. found below grade	.....	.....	2.9	1.0
Samples taken at receiving platforms	.....	.....	1,359	1,651
Number found below grade	.....	.....	33	130
Per cent. found below grade	.....	.....	2.4	7.9
Samples brought to laboratory by citizens	9,739	7,115	4,786	3,701
Number found below grade	847	374	338	255
Per cent. found below grade	8.6	5.2	7.06	7.8
Law suits instituted	1,473	2,689	1,312	1,201
Amount of fines imposed by courts	$ 667.50	$ 7,880	$ 1,305	$ 920
SANITARY INSPECTION OF MILK DEPOTS, MARKETS AND STORES				
Total inspections—depots and stores	5,183	11,064	11,530	11,326
Found insanitary—depots and stores	2,090	1,710	831	1,052
Reinspections—depots and stores	1,455	5,791	5,036	4,482
Found insanitary—depots and stores	267	1,427	1,329	1,060
Contagious disease investigations	.....	464	842	1,442
Law suits instituted	47	352	1,442	925
Amount of fines imposed by courts	$ 282	$ 2,112	$5,846.50	$ 4,756
LICENSES ISSUED				
Total licenses	5,188	4,618	5,136	5,125
Peddlers' licenses	2,716	2,609	2,666	2,677
Store licenses	2,472	2,009	2,470	2,448
DAIRY FARM INSPECTION—COUNTRY	1907	1908	1909	1910
Total inspection of dairy farms	7,374	9,707	6,451	2,617
Dairy farms found insanitary	291	1,162	1,821	963
Reinspections	.....	158	3,760	2,604
Found insanitary on reinspection	.....	58	1,473	1,098
Dairy farms whose milk supply was excluded from Chicago market until insanitary conditions were corrected	436	300	.....	138
Dairy farms whose milk supply was excluded on account of contagious diseases on premises	32	50	.....	98
Dairy farms whose milk supply was excluded from Chicago market on account of failure to have cows tuberculin tested or milk pasteurized	.....	.....	.....	26
SUMMARY OF INSANITARY PREMISES				
Barns insanitary	732	3,671	2,893	2,594
Milk houses insanitary	440	2,996	1,928	1,262
No milk houses maintained	1,840	2,732	1,499	919
Wells condemned on dairy farms	.....	698	.....	.....
TUBERCULIN TESTS OF MILCH COWS		1908	1909	1910
Total cows in city tested with tuberculin		860	250	213
Number giving positive reaction		62	.....	.....
Per cent. giving positive reaction		7.2	.....	....
Total cows in country tested (approximate)		10,000	29,940	6,089

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DIVISION OF MILK INSPECTION—*Continued.*

MISCELLANEOUS MILK DATA	1908	1909	1910
Total daily shipments of milk into Chicago (gals.)	240,000	242,080	249,960
At an average price of 8 cents per quart for milk and cream Chicago pays yearly	$28,032,000	$28,274,944	$29,195,328
Estimated number of cows that supply milk for Chicago market	150,000	119,067	120,000
Number of pasteurizers installed in city	.....	.....	210
Number of pasteurizers installed in country	.....	.....	100
Capacity of pasteurizers in the city	.....	.....	3,000
Capacity of pasteurizers in the country	.....	.....	.....
Gallons of milk dumped or returned	.....	.....	2,138
Eight-gallon cans dumped	.....	.....	267

DIVISION OF ICE INSPECTION.

	1907	1908	1909	1910
Licenses issued to ice dealers	1,386	1,533	1,592	1,748
Ice samples collected for analyses	510	129	126	213
Ice depots, cars, wagons, etc., inspected	.....	5,669	4,061	3,802
Found insanitary	.....	949	1,146	1,075
Reinspections of depots, cars, wagons, etc.	.....	730	1,133	1,510
Found insanitary on reinspection	.....	89	317	508
Law suits instituted	7	16	4	10
Amount fines imposed by courts	$40	$96	.....	.....

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THE FOLLOWING TABLE GIVES THE NUMBER OF MILK SAMPLES TAKEN AND THE PER CENT BELOW GRADE BY MONTHS, FOR THE YEARS 1903, 1904, 1905, 1906, 1907, 1908, 1909 AND 1910.

	1903		1904		1905		1906		1907		1908		1909		1910	
	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade	Samples	Per Cent Below Grade
January	1674	5.7	1802	6.8	2046	8.0	2231	5.8	4114	7.8	5972	8.9	3961	2.8	4078	2.5
February	1483	3.9	1719	6.6	1682	7.1	2880	8.1	3346	8.0	5409	6.0	3584	3.2	3881	3.7
March	1574	6.3	1426	6.0	3376	6.0	3209	5.8	4987	6.2	5923	6.5	4354	4.1	4020	4.8
April	1853	4.9	2842	4.3	2591	7.0	3614	5.5	5241	7.8	5922	7.2	4174	5.4	2658	4.2
May	1959	6.5	2056	5.6	2424	4.1	4612	4.1	6360	7.5	5025	4.7	4389	3.9	2151	2.1
June	1692	6.2	2301	8.3	2090	5.5	4627	6 6	5176	7.9	5821	5.5	3380	6.5	1963	2.9
July.....	2165	5 6	1474	3.5	2047	6.6	5447	8.8	5553	6.9	6280	3.8	4039	6.2	1977	2.6
August..... ...	3128	5.1	2344	7.2	2001	5.7	5430	9.8	4422	10.2	5876	2.9	2404	7.8	3398	7.5
September	3238	5.2	1806	5.2	1271	3.8	4528	9.6	3935	9.7	5504	3.9	2266	3.8	2744	2.3
October	2542	4.9	1647	6.9	1397	2.1	4945	6.5	6216	7 8	4635	2.6	3019	2.1	2435	3.1
November.....	2432	7.2	3180	7.2	2258	6.0	4800	6.7	5630	2.1	3518	2.7	2795	2.1	2758	1.3
December.....	2186	8.4	2646	8.0	2484	5.8	4516	8.6	5668	9.0	4109	3.2	3488	2.6	2681	3.5
By Years.....	24,926	5.8	25,243	6.3	25,727	5.8	50,939	7.1	60,668	7.4	63,984	4.8	41,853	4.2	34,739	3.4

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THE FOLLOWING FIGURES SHOW THE APPROXIMATE DAILY SHIPMENTS OF MILK AND CREAM, IN EIGHT GALLON CANS, INTO THE CITY OF CHICAGO, OVER THE VARIOUS LINES OF RAILROADS, AND OTHER SOURCES.

RAILROADS	1898	1899	1900	1901	1902	1903	1904
C. & N. W.	5,400	5,400	6,000	6,500	8,500	9,000	10,000
C. M. & St. P.	2,600	2,660	3,500	4,000	5,500	5,500	6,500
Illinois Central	1,500	1,550	1,500	1,900	2,300	2,300	2,500
C. G. W.	1,600	1,600	1,200	1,550	1 700	1 700	1,800
Wis. Central	800	800	700	1,000	1,000	1,000	1,000
C. B. & Q	800	800	700	900	950	1,000	1,000
A. T. & S. F.	550	550	500	600	650	600	600
Grand Trunk	450	450	400	500	500	500	500
Rock Island	450	450	500	700	600	500	500
Erie	400	400	300	400	450	500	500
Wabash	350	350	300	420	400	400	400
Penna.	300	350	400	550	300	300	300
P. C. C. & St. L.	200	200	.....	.....	300	300	300
Monon	150	150	200	200	250	300	300
C. & E. I	200	200	200	250	300	300	300
B. & O	250	250	200	300	300	300	300
C. & A.	100	100	200	250	300	300	200
Mich. Central	.....	.....	.....	.....	.....	.....	.....
C. & S. B. Electric	.....	.....	.....	.....	.....	.....	.....
A. E. & C. Electric	.....	.....	.....	.....	.....	.....	200
American Express	.....	.....	.....	.....	.....	.....	.....
Wells Fargo Express	.....	.....	.....	.....	.....	.....	.....
Cows inside City Limits	.....	.....	.....	.....	.....	.....	.....
Hauled by Wagon	.....	.....	.....	.....	.....	.....	.....
Totals	16,100	16,260	16,800	20,020	24,300	24 800	27,200

RAILROADS	1905	1906	1907	1908	1909	1910
C. & N. W.	10,000	11.000	11,000	11,000	12,000	12,200
C. M. & St. P.	6,600	6 500	6 500	7.500	8,000	8,600
Illinois Central	2,600	2,600	2,600	2,600	1.865	1,775
C G. W.	1,800	1,700	1,700	1,700	1,175	1,400
Wis. Central	1,600	1,800	1,800	1,800	940	800
C. B. & Q	1,100	1,000	1,000	1,000	815	800
A. T. & S. F.	600	600	600	600	500	300
Grand Trunk	550	500	500	500	520	500
Rock Island	560	500	500	500	580	600
Erie	500	500	500	500	550	620
Wabash	400	400	400	400	200	300
Penna.	400	550	600	600	475	500
P. C. C. & St. L.	400	400	400	400	200	.....
Monon	400	400	500	500	200	300
C. & E. I	350	400	400	400	60	25
B. & O.	300	300	300	300	425	480
C. & A.	300	300	300	300	315	200
Mich. Central	.....	.....	.....	.....	50	50
C. & S. B. Electric	.....	.....	.....	.....	25	30
A. E. & C. Electric	350	400	300	300	600	600
American Express	.....	.....	.....	.....	20	30
Wells Fargo Express	.....	.....	.....	.....	15	35
Cows Inside City Limits	.....	.....	.....	.....	500	700
Hauled by Wagon	.....	.....	.....	.....	230	400
Totals	28,650	29,850	30,000	30,000	30,260	31,245

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STATEMENT OF FINES IMPOSED UPON DEALERS FOR HANDLING BELOW-GRADE MILK.

FINES	1907		1908		1909		1910	
	No. Cases	Total	No. Cases	Total	No. Cases	Total	No. Cases	Total
$1.00	.....	.....	1	.....	.....	.....	.....	.....
2.00	.....	.....	.....	.....	.....	.....	.....	.....
3.00	.....	.....	.....	.....	.....	.....	.....	.....
4.00	.....	.....	.....	.....	.....	.....	.....	.....
5.00	8	$40.00	169	$845.00	31	$155.00	43	$215.00
7.50	1	7.50	.....	.....	.....	.....	.....	.....
10.00	5	50.00	113	1130.00	51	510.00	12	120.00
15.00	2	30.00	13	195.00	3	45.00	1	15.00
20.00	2	40.00	8	160.00	11	220.00	1	20.00
25.00	4	100.00	69	1725.00	9	225.00	2	50.00
50.00	4	200.00	25	125.00	3	150.00	2	100.00
100.00	2	200.00	21	2100.00	.....	.....	4	400.00
200.00	.....	.....	4	800.00	.....	.....	.....	.....
400.00	.....	.....	2	800.00	.....	.....	.....	.....
Costs	962	.....	1197	.....	586	.....	498	.....
Non-Suits	287	.....	796	.....	501	.....	436	.....
Pending	197	.....	272	.....	117	.....	130	.....
No Service	.....	.....	.....	.....	.....	.....	72	.....
Totals	1473	$667.50	2689	$7880.00	1312	$1305.00	1201	$920.00

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REPORT OF

BUREAU OF VITAL STATISTICS

DR. M. O. HECKARD
Registrar of Vital Statistics

DR. C. ST. CLAIR DRAKE
Asst. Registrar of Vital Statistics

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BUREAU OF VITAL STATISTICS.

Vital statistics bear the same relation to public health work that an adequate system of accounting does to the commercial house. They are fundamental to each. The mortuary report is to the health officer as the trial balance is to the merchant. It shows either profit or loss in the work at hand.

The progressive wholesale merchant keeps records which show him at any time not only the indebtedness of each customer but also the amounts purchased in each department. A customer may be a heavy purchaser in one department and buy little or nothing in another, the reason for which is sought in an effort to control his trade.

Newsholme says: "Modern sanitary science owes its existence to the registration of deaths and their causes; * * * * Mortality statistics surpass all other vital statistics in importance, whether they are considered from a social or actuarial standpoint, or from the standpoint of preventive medicine."

Dr. J. N. Hurty, Secretary State Board of Health, Indiana, in an address before the American Medical Association, in 1910, said: "The accurate collection, tabulation and analysis of records of births, stillbirths, deaths, marriages, divorces and sickness may be said to constitute the bookkeeping of humanity. The bookkeeping of dollars is very important, but of far greater importance is the bookkeeping of those events in the lives of human beings which are fundamental to * * * * the practical application of hygiene, to secure higher efficiency, longer duration of life and fuller measure of happiness."

Dr. Marshall Langton Price, Secretary State Board of Health, Maryland, in an address before the Section on Vital Statistics, American Public Health Association, said: "The science of vital statistics is to the sanitarian what the chart and compass are to the navigator. It can no more be expected that the sanitarian will steer a straight course without the aid of vital statistics, than that the navigator will reach his goal without his chart and compass. There is, however, this important difference: the sailor cannot go wrong and not know it, but the hygienist can steer a false course and never know how many lives his mistakes have been the means of wrecking."

Mr. S. N. D. North, former Director, Bureau of the Census, in an address before a joint meeting of the American Statistical Association and the American Sociological Society, said: "The proposition I advance is that the future development of economics and social science depends upon their successful utilization of statistics and statistical method more largely than upon any other consideration. Wherever sociology or economics can definitely plant its conclusions upon the demonstrated re-

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sults of statistical methods, it stands upon solid ground and reaches conclusions which stand the test of time."

Mr. Frederick L. Hoffman, Statistician for The Prudential Insurance Company of America, says: "The accurate registration and qualified analysis of vital statistics is one of the most important functions of government. Vital statistics alone furnish a definite measure of the value of sanitary improvements and the progress of medicine and surgery. Vital statistics furnish the basis of an approximate estimate of national health and they indicate with reasonable certainty tendencies making for national advancement or deterioration."

The value of mortuary records and the statistics compiled from them is increased in direct proportion to the care with which they are collected. Thus, the greatest care must be exercised at every step, from the beginning until the completion of the task, if the most satisfactory and useful results are to be obtained.

The importance of such records and resulting statistics apparently is not generally appreciated by the public or even by the medical profession, judging from the difficulty sometimes encountered in securing the necessary data from these sources. Yet there is not a day in this great, cosmopolitan city when these records are not required to safeguard social, civil and legal interests. When some important record is needed and cannot be found or such record is defective and some large inheritance is placed in jeopardy thereby, the public and even the press show considerable concern about the matter, but it is only a short period of time before they again lapse into their accustomed lethargy.

Practically the only registration in the United States in 1896 was in the large cities, but the wide variation in the methods used led Chicago to correspond with registration officials of the cities of the United States of over 100,000 inhabitants, with a view to organizing a National Municipal Registrars' Association. The purpose of such an organization was to bring the registration officials together at certain intervals, study the methods employed and by adopting the best of each effect a uniformity which would render their statistics comparable.

Dr. Cressy L. Wilbur, then State Registrar of Michigan, suggested that the first meeting of this association be called in connection with the meeting of the American Public Health Association at Philadelphia, October, 1897. This was done, but in the meantime a number of political changes had taken place in the personnel of the registration offices, and many who had agreed to be there were no longer in office, consequently, no longer interested in this work; therefore few attended the meeting, the undertaking was abandoned, and no further attempt was made until ten years later.

In 1907, Dr. Wilbur, who had become Chief of the Division of Vital Statistics, Bureau of the Census, Washington, D. C., sent out a call for a meeting of all registrars, State and municipal, to be held in connection with the American Public Health Association meeting at Atlantic City, N. J., October, 1907. This meeting was well attended

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and a section on vital statistics was added to the American Public Health Association.

At that meeting committees were appointed and certain rules of statistical practice were suggested, some of which were adopted a year later at the meeting at Winnipeg, others two years later at Richmond, and still others at the Milwaukee meeting in the summer of 1910. The work is to be continued at the next meeting, which is to be held in the city of Havana, Cuba, in 1911.

By the use of these rules it is hoped that every city and State in the United States will use the same methods of collecting, treating and stating statistical data, the accomplishment of which will be materially advanced by the adoption of the uniform statistical tables which are now being drafted by the committee on forms.

Several changes have been made in our methods of registration in order to conform to these rules. Since January 1, 1909, we have included in our mortuary reports all deaths that *occurred* in Chicago during the year, instead of all deaths *reported* to the Department during that time.

The International Classification of the Causes of Death was adopted by Chicago, January 1, 1910, an action recommended by the registrar as early as 1898. At the same time the certificate of death was so changed that its statements were essentially those of the standard certificate, with the exception of the statement of occupation. It differs from the latter only in arrangement and the more specific instruction on the back of the Chicago blank.

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COMPARISON OF STATEMENTS: CHICAGO AND STANDARD CERTIFICATES OF DEATH.

CHICAGO.

1. Full name.....

2. (a) Sex..... (b) color.....(c) { single / married / widowed / divorced }

3. (a) Birthplace..... (b) date of birth.....

4. Age.....yrs.....mos.....dys.....hrs. (If less than 1 day old)

5. Died on the.....day of.....191....

6. { (a) Last occupation ..... (Profession, trade or kind of work) / (b) Industry or business ..... / From the year (c).....to the year (c)..... }

7. { Former occupation (a)..... ..(b)..... / From the year (c).....to the year (c)..... }

8. (a) Place of death ..... Street and No.

(b) How long at place of death.....

9. (a) Usual residence..... (b) Ward.....

10. How long in City.....

11. How long in State .....

12. How long in U. S. if foreign born .....

13. { (a) Name of Father..... / (b) Birthplace of Father..... (State or Country) }

14. { (a) Maiden name of Mother ..... / (b) Birthplace of Mother..... (State or Country) }

The foregoing stated personal particulars are true to the best of my knowledge and belief.

15. Informant.....
Address .....

16. Place of burial.....
Date of burial.....

17. Undertaker.....License No.....
Address.....Tel.....

Physician's Certificate of Cause of Death.

I hereby certify that I attended deceased from .....191.... to.....191.... ; that I last saw....alive on the.....day of.....191....; that....died on the day and about the hour stated above, and that to the best of my knowledge and belief the cause of.....death was as hereunder written. (If under one year old state how fed.)

...use of death.....
...ation of each according to the clinical ...ory.)
...tory (secondary).....

...d this ..191.. Signature.....M.D.
Address.....Tel.....

STANDARD.

2. Full name.....

3. Sex..... 4. Color or race.....5. { single / married / widowed / divorced }

9. Birthplace..... 6. Date of birth.....

7. Age.....yrs .....mos .....dys. { If less than 1 day, ...hrs. or .... min.

16. Date of death.....191....
(Month) (Day) (Year)

8. Occupation: (a) Trade, profession or particular kind of work.....(b) General nature of industry, business or establishment in which employed (or employer) .....

1. Place of death..... No....., ...Street

18. Length of residence at place of death.....yrs. .....mos.....ds. Former or usual residence.....1.....Ward .....

18. Length of residence in State.....yrs. ..... mos.....ds. .....

10. Name of Father.....

11. Birthplace of Father .....
(State or Country)

12. Maiden name of Mother .....

13. Birthplace of Mother .....
(State or Country)

The above is true to the best of my knowledge

14. Informant.....
Address .....

19. Place of burial or removal .....
Date of burial.....191....

20. Undertaker..... ..... Address.....

Medical Certificate of Death.

17. I hereby certify that I attended deceased from .....191....to.....191....; that I last saw h....alive on.....191....and that death occurred on the date stated above at.... m. The CAUSE OF DEATH was as follows .....

Duration..... yrs..... mos..... ds.
CONTRIBUTORY .....
(Secondary) .....
Duration.....yrs.....mos. .....ds.

Signed.....M.D.
.....191.... Address.....

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Note statement of occupation on the Chicago death certificate, which reads: *"Last Occupation,* (*a*) Profession, trade or kind of work; (*b*) Industry or business, *and the year from which to which so employed."* When occupation has changed within five years prior to death, the *"Former Occupation,* (*a*) *Profession, trade or kind of work;* (*b*) *Industry or business, and the year from which to which so employed."*

Then note that the duration of disease is not, as so often stated, the time of attendance; but the actual duration of the disease *"According to the clinical history."* The questions are stated in so clear a manner that a misunderstanding is scarcely possible.

The tabulator can select from his certificate such data as he desires with exactness. If he still wishes to use the statistically misleading occupation to which the individual was driven on account of his disease, he can readily do so. If, however, he desires to ascertain the occupation in which the individual was engaged at the time the disease was contracted—the occupation responsible for the sickness—he can accurately do so by comparing duration of disease with years engaged in each occupation.

Death Certificate: The certificate is made out in duplicate by the undertaker who obtains information from nearest of kin or one in possession of facts and has informant certify to same by signing and giving his address. The certificate is then taken to the attending physician who certifies to cause or causes of death and the duration of each.

The certificate is then presented to the Health Department for a burial permit, and, if completely filled out and a proper cause of death given, a permit for burial is issued.

Burial Permit: The burial permit is made with a counterfoil which bears the same number as the permit. These numbers run consecutively, beginning January 1, each year, with number 1, and continuing throughout the year. When a permit is issued its number is stamped in the upper right hand corner of the certificate upon which it is issued, as the registration number of that certificate. The permit with coupon attached is presented by the undertaker to the superintendent of the cemetery at the time of burial.

Cemeteries to Report: The cemetery superintendent or clerk retains the permit as his authority for interment, signs, dates and returns the coupon to the Health Department, where these coupons are arranged in numerical order, checked with the death certificates and stamped "Interment Verified." They are then filed as permanent receipts for burials.

Daily List of Deaths: The name of deceased, age, place of death, date of death and registration number are written on a daily report blank, a copy of which is furnished the Election Commissioners and the City Press.

Card Index to Records: An index card with the name, date of death, place of death and registration number is next made and filed alphabetically as a perpetual index to the records.

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Daily Sanitary Balance Sheet: An abridged daily tabulation of the diseases of major sanitary importance is made, with age distribution as follows: Uuder 1 year; 1 to 4 years; 5 to 9 years; then by decennial groups to 80 years, and over 80 years.

Report Includes: Every death that occurs in Chicago, whether of a resident or non-resident, is counted, including every child that has lived any time, however brief; all visitors who are taken sick and die here; all deaths of non-residents from accidents or violence, occurring within the city limits; all patients who come to Chicago hospitals for treatment and die here; patients who die in the county institutions just outside the city limits and who were Chicago residents, are charged back to the wards from which they came.

The certificates are carefully scanned for defects and discrepancies, the duplicates being separated from the originals and verified. One set is bound in numerical order in books of five hundred each, and the other set is forwarded to the State Board of Health at Springfield, Illinois.

An endeavor has been made by the Department of Health to illustrate, by diagrams, maps, etc., the lessons learned from the study of its vital statistics, thus exemplifying in graphic manner the practical application of this important work.

Special arrangements have been made by the Commissioner of Health with the Division of Vital Statistics, Bureau of the Census, whereby the detailed tabulation of Chicago's mortuary statistics for 1910 will be made by the Division in Washington, D. C.

At the suggestion of the present Commissioner of Health, an effort has been made during the last two years to eliminate the terms, "convulsions" and "bronchitis" from our mortuary reports. By asking for additional information we were able to classify convulsions under the diseases which caused them and to classify acute bronchitis as pneumonia, and chronic bronchitis as pulmonary tuberculosis. The routine practice of calling physicians and undertakers by telephone when statement of cause of death is not clear to us or personal particulars not completely stated, entails an immense amount of work, this being found necessary with about one-third of the certificates. The uniform courtesy received from the medical profession and from undertakers in these cases has enabled us to materially increase the completeness and value of our records, safeguard the interests of their clients and greatly improve the usefulness of our statistics.

Department Rules Based on the Ordinances.

Revision of Ordinances: Since our last published report the local registration laws have undergone such complete revision that, perhaps, a little space can be used with propriety in detailing a few of their essential features. When we attempt to enforce even the most carefully written laws in court, it is amazing what gross defects may be found in them by a keen lawyer for the defense. Then, too, new conditions are constantly arising which must be met, and the only way to successfully meet

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these conditions is, when a defect appears, to have it remedied by a proper amendment to the law. The following results have been obtained by this procedure:

Undertakers Licensed: Under the law, no one but a licensed undertaker is permitted to act as an undertaker, prepare bodies for burial, or, in the capacity of an undertaker, conduct or manage a funeral. Any one desiring a license makes application to the Commissioner of Health in writing, with the recommendation of two licensed undertakers as to his moral character and fitness to be entrusted with such license, and furnishes by written examination satisfactory evidence of his knowledge of the laws and ordinances of the city and the rules and regulations of the Department of Health governing the removal, preparation and burial or cremation of the dead, also that he has a practical knowledge of approved and sanitary methods of caring for same. No charge is made for the examination, but the license fee is $10 a year.

Must Obtain Frontage Consent: Under a recent ordinance no one can be licensed to establish or conduct an undertaking business on a strictly residence street until he files with the Commissioner of Health the written consent of two-thirds of the property owners on both sides of the street within the block where such business is to be located.

Morgue Provisions: Every undertaking establishment is required to provide a compartment or room capable of being completely shut off from the other parts of the establishment, with free ouside ventilation and light, floor constructed of or covered with a non-absorbent material and connected with the sewer by an approved sanitary drain.

Posting of License: The license is required to be kept posted in a conspicuous place on the wall in the store or establishment during the period of the license, and is subject to revocation by the Mayor.

Permission Required Before Removing a Dead Body: No body can be moved from place to place within the city or from the city or cremated or deposited in any vault, or interred, disinterred, or in any manner disposed of, without first obtaining a permit from the Commissioner of Health or Registrar of Vital Statistics so to do; nor can anyone dispose of such body otherwise than in accordance with the terms of such permit. Permit for burial or removal is issued only upon the presentation to the Registrar of Vital Statistics of a proper death certificate signed by the physician who was in attendance during last illness; or if death was due to violence, the coroner; or if death occurred outside of Chicago, a permit from the proper authority at place where death occurred.

Permit May Be Recalled: Any permit so issued may be recalled by the Commissioner of Health and anyone holding such permit is required upon notification of its recall to forthwith surrender it to him.

Deaths in Hospitals: If death occurred in a hospital or at other than usual place of residence and if from a non-contagious disease, removal of the body to the place of usual residence may be authorized by telephone.

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To Provide a Suitable Room: The law provides that every hospital shall maintain in its building a suitable room to be approved by the Commissioner of Health for the proper care of dead bodies pending their removal.

Order from Relative: The law provides that no one connected with a hospital shall order or permit the removal of the body of any patient that has died therein within twenty-four hours after death, unless removal is authorized in writing and permission of the Department of Health has first been obtained. The mode of procedure is: *first,* secure a written order for the body from a relative: *second,* a proper certificate of death; *third,* call the Registrar by telephone and read the death certificate to him.

Office Hours: *Permits*: The Department of Health is open for the issuance of burial permits from 8 a. m. to 10 p. m., every day in the year. After 10 p. m. permission may be obtained from the Registrar at his home.

Contagious Disease Funerals: The body of a person who has died of smallpox or bubonic plague must be buried by the Department of Health. The body of a person who has died of smallpox, bubonic plague, typhus fever, epidemic cerebro-spinal meningitis, diphtheria, membranous croup, croup (unless proven to be non-diphtheritic), scarlet fever, measles, anthrax, leprosy or any disease, the symptoms of which so resemble one of the above contagious diseases that a definite diagnosis cannot be readily made, and until such case shall have been *proven* to be non-contagious, is required to be buried within thirty-six hours from the time of death, funeral to be directly from place of death to cemetery and attended only by adult members of immediate family, whose presence is necessary to the conduct of the funeral, who have been in attendance upon the case and who shall have been exposed to such disease prior to the funeral.

Casket: The casket for use in such a case is required to be water and air tight, to be approved by the inspector, and, before removed from the house, it be sponged with a solution of bichlorid of mercury. The body is taken directly from place of death to the cemetery and immediately buried.

House Disinfection: As soon as the funeral is started, if there be no one sick in the house, the premises are disinfected by the inspector during the absence of the family.

Rugs, Flowers, etc.: No one is permitted to take into any house where death has occurred from any one of the contagious diseases herein before mentioned, any funeral rug, flowers, drapery or other article which may be the means of spreading contagion, nor shall any person remove from such house any article or thing which has been exposed to infection which may be the means of spreading contagion, until such article or thing shall have first been disinfected by the Department of Health.

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Funeral Paraphernalia: A section, the passage of which was recently secured by the Chicago Undertakers' Association, provides that no fur rug, canopy, or undertaker's paraphernalia composed wholly or in part of a textile fabric shall be used in the preparation of *any* dead body for burial, except such clothing and wrapping as are buried with the body.

Deaths from Violence: In deaths from violence, which occur on streets, in public places or other than places of residence, the police at once take charge of the remains, in order that no evidence as to cause or nature of such violence or cause of death may be destroyed. If so ordered by a relative or friend, the body is removed to its place of usual residence. If not so ordered, or if residence is unknown, it is removed by the Police Department to the nearest undertaking establishment where it may be held for one hundred hours, when, if not claimed by relatives or friends, it is taken to the public morgue.

Duty to Report: It is the duty of the undertaker to whose establishment such a body is taken to report the fact to the Department of Health within twelve hours, giving all the particulars in his possession.

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DETAILED

MORTALITY STATISTICS

OF THE CITY OF CHICAGO

FOR THE YEARS 1907, 1908 AND 1909

SUMMARY STATEMENT FOR 1910

INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH

CLASSIFICATION AND TABULATIONS BY THE UNITED STATES BUREAU OF THE CENSUS

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.

Calendar Year, 1907.

Line No.	CAUSE OF DEATH		AGE								
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
1	All causes		32,198	6,699	1,682	821	539	346	10,087	908	484
2	Males		18,320	3,760	871	417	305	178	5,531	456	263
3	Females		13,878	2,939	811	404	234	168	4,556	452	219
4	I—GENERAL DISEASES		9,079	522	449	363	272	181	1,787	460	194
5	Males		5,114	285	229	181	153	102	950	223	89
6	Females		3,965	237	220	182	119	79	837	237	105
7	Typhoid fever	M	261	2	2	4	3	4	15	9	13
8		F	111	.....	1	2	1	1	5	6	10
9	Malarial fever	M	4	.....	1	....	....	....	1	....	....
10		F	4	.....	.....	....	....	....	.....	....	....
11	Smallpox	M	1	.....	.....	1	....	....	1	....	....
12		F	.....	.....	.....	....	....	....	.....	....	....
13	Measles	M	141	31	47	25	10	7	120	16	1
14		F	121	27	41	16	11	8	103	16	1
15	Scarlet fever	M	362	18	42	54	61	47	222	88	23
16		F	356	15	44	62	46	41	208	107	22
17	Whooping cough	M	119	60	29	14	9	1	113	4	....
18		F	127	54	34	19	12	2	121	6	....
19	Diphtheria	M	300	25	54	60	41	33	213	57	11
20		F	245	17	53	50	36	16	172	53	8
21	Croup	M	6	.....	2	1	....	1	4	1	....
22		F	4	1	.....	1	1	....	3	1	....
23	Influenza	M	105	7	2	2	3	....	14	1	1
24		F	133	2	2	1	....	....	5	1	5
25	Cholera nostras	M	4	1	.....	....	....	....	1	....	....
26		F	.....	.....	.....	....	....	....	.....	....	....
27	Dysentery	M	66	14	6	2	....	....	22	1	....
28		F	62	14	6	2	....	1	23	1	....
29	Erysipelas	M	62	15	.....	....	....	....	15	1	....
30		F	38	16	3	2	....	....	21	....	....
31	Other epidemic diseases	M	7	4	.....	2	....	....	6	1	....
32		F	2	.....	.....	....	....	1	1	1	....
33	Septicemia	M	41	4	.....	....	1	1	6	1	....
34		F	26	4	1	....	....	....	5	1	....
35	Tuberculosis of lungs	M	2,232	23	15	5	3	4	50	10	18
36		F	1,280	15	13	12	....	2	42	15	39
37	Tuberculosis of larynx	M	22	.....	.....	....	....	....	.....	....	1
38		F	11	.....	.....	....	1	....	1	....	....
39	Tuberculous meningitis	M	97	18	16	6	8	2	50	10	4
40		F	78	23	11	7	5	1	47	13	5
41	Abdominal tuberculosis	M	56	6	3	1	3	....	13	4	2
42		F	81	3	4	3	1	1	12	2	2
43	Pott's disease	M	9	.....	1	....	....	....	1	1	....
44		F	4	1	.....	....	....	....	1	....	....
45	Tuberculous abscess	M	.....	.....	.....	....	....	....	.....	....	....
46		F	1	.....	.....	....	....	....	.....	....	1
47	White swelling	M	5	.....	.....	....	....	....	.....	1	....
48		F	4	1	.....	....	....	....	1	....	....
49	Tuberculosis of other organs	M	22	.....	.....	1	2	....	3	1	....
50		F	17	1	3	....	....	....	4	....	1
51	General tuberculosis	M	80	2	5	1	2	1	11	....	3
52		F	39	3	1	....	1	....	5	2	1
53	Scrofula	M	1	1	.....	....	....	....	1	....	....
54		F	1	.....	.....	....	....	1	1	....	....
55	Venereal diseases	M	95	49	2	1	....	....	52	....	....
56		F	59	36	3	1	1	....	41	....	....
57	Cancer of mouth	M	35	.....	.....	....	....	....	.....	....	1
58		F	5	.....	.....	....	....	....	.....	....	....
59	Cancer of stomach and liver	M	384	.....	.....	....	1	....	1	....	....
		F	278	.....	.....	....	....	....	.....	....	....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
1	339	1,370	1,445	1,537	1,766	1,878	1,915	1,778	1,635	1,630	1,474	1,279	1,008	679	341	100	44	1	1
2	449	778	856	903	1,083	1,241	1,241	1,108	1,012	943	860	645	478	292	134	34	10	1	2
3	360	592	589	634	683	637	674	670	623	687	614	634	530	387	207	66	34	....	3
4	406	641	660	653	693	616	642	560	478	417	355	234	144	91	37	10	1	....	4
5	196	369	389	393	429	389	386	338	279	236	205	122	66	39	12	4	....	....	5
6	210	272	271	260	264	227	256	222	199	181	150	112	78	52	25	6	1	....	6
7	39	43	45	19	28	12	6	13	7	.....	5	1	.....	....	1	....	....	....	7
8	21	14	13	11	11	9	5	3	.....	1	2	1	.....	....	....	....	....	....	8
9	....	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	9
10	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	1	....	....	....	....	....	10
11	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	11
12	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	12
13	....	.....	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	13
14	....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	14
15	12	6	2	3	2	2	.....	.....	1	.....	1	.....	.....	....	....	....	....	....	15
16	7	4	2	4	1	.....	1	.....	.....	.....	.....	.....	.....	....	....	....	....	....	16
17	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	17
18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	18
19	5	4	3	4	.....	.....	2	.....	1	.....	.....	.....	.....	....	....	....	....	....	19
20	4	1	3	2	1	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	20
21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	21
22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	22
23	1	3	2	3	6	5	9	9	5	15	8	8	10	4	1	....	....	....	23
24	3	3	2	5	6	3	6	6	4	8	15	17	17	18	5	3	1	....	24
25	.....	.....	.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	....	....	....	....	....	25
26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	26
27	1	1	.....	1	2	3	5	4	6	4	4	3	4	4	1	....	....	....	27
28	1	1	2	1	2	1	6	3	5	2	3	4	1	4	2	....	....	....	28
29	....	.....	1	2	5	3	3	12	4	5	5	2	2	1	1	....	....	....	29
30	2	.....	.....	2	3	.....	1	2	1	1	2	.....	1	1	1	....	....	....	30
31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	31
32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	32
33	2	1	3	3	4	4	3	4	3	2	3	1	.....	2	....	....	....	....	33
34	1	3	1	1	1	.....	5	.....	1	2	2	.....	.....	1	2	....	....	....	34
35	97	250	281	307	308	256	213	150	124	79	49	25	10	2	2	1	....	....	35
36	33	204	191	163	143	98	78	56	32	43	16	14	8	4	2	....	....	....	36
37	1	.....	1	1	4	4	2	5	2	....	1	.....	.....	....	....	....	....	....	37
38	.....	3	1	2	.....	2	1	.....	1	.....	.....	.....	.....	....	....	....	....	....	38
39	4	9	5	4	1	6	.....	2	1	1	.....	.....	.....	....	....	....	....	....	39
40	3	1	3	2	1	1	.....	1	1	.....	.....	.....	.....	....	....	....	....	....	40
41	2	1	2	6	8	5	3	3	.....	2	2	.....	.....	1	.....	....	....	....	41
42	8	9	10	8	5	7	6	3	1	6	.....	1	.....	.....	1	....	....	....	42
43	3	.....	1	.....	.....	1	.....	1	.....	.....	1	.....	.....	....	....	....	....	....	43
44	1	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	....	....	....	....	....	44
45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	45
46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	46
47	.....	1	.....	.....	1	.....	1	.....	.....	.....	.....	.....	1	....	....	....	....	....	47
48	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	48
49	.....	1	3	1	.....	3	3	3	2	1	1	.....	.....	....	....	....	....	....	49
50	.....	2	1	1	1	1	1	.....	3	.....	.....	1	.....	....	....	....	....	....	50
51	5	16	8	4	6	8	10	4	2	.....	1	2	.....	....	....	....	....	....	51
52	6	9	2	3	7	2	.....	.....	1	.....	.....	1	.....	....	....	....	....	....	52
53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	53
54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	54
55	.....	4	6	5	5	5	6	9	2	1	.....	.....	.....	....	....	....	....	....	55
56	2	2	3	4	4	.....	1	2	.....	.....	.....	.....	.....	....	....	....	....	....	56
57	.....	1	1	.....	.....	1	1	5	8	5	5	4	2	1	.....	....	....	....	57
58	.....	.....	.....	.....	1	.....	1	1	2	.....	.....	.....	.....	....	....	....	....	....	58
59	2	2	2	8	10	24	48	43	53	62	57	40	21	5	5	1	....	....	59
60	....	1	3	7	17	18	35	32	46	27	32	26	23	8	2	1	....	....	60

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	CAUSE OF DEATH		AGE								
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	I—GENERAL DISEASES—Continued										
61	Cancer of intestines	M	77								
62		F	113								
63	Cancer of female genital organs	F	276								
64	Cancer of breast	F	104								
65	Cancer of skin	M	16	1					1		
66		F	8								
67	Cancer of other or unspecified organs	M	151	1		1	1		3	1	1
68		F	92	1				1	2	1	1
69	Tumor	M	9	1	1				2		
70		F	6	1					1		
71	Rheumatism	M	67	1	1		1	1	4	10	1
72		F	99	1		1	2	2	7	1	1
73	Diabetes	M	124							3	1
74		F	102			2			2	2	1
75	Anemia, leukemia	M	71	1			2		3	1	1
76		F	63	1		1			2	1	1
77	Alcoholism	M	63								
78		F	15								
79	Chronic poisonings	M	7								
80		F	1								
81	Other general diseases	M	12				2		2	1	
82		F	10					1	1	1	
83	II—DISEASES OF NERVOUS SYSTEM		2,383	679	124	61	43	23	930	72	41
84	Males		1,366	401	66	33	24	10	534	30	23
85	Females		1,017	278	58	28	19	13	396	42	18
86	Encephalitis	M	8	2	2				4	1	
87		F	7	2	2	1			5	1	1
88	Meningitis	M	264	79	42	27	18	7	173	13	9
89		F	217	53	39	18	15	9	134	25	14
90	Locomotor ataxia	M	50								
91		F	12								
92	Other diseases of spinal cord	M	44	1		1			2	3	
93		F	28		1	2			3		
94	Apoplexy	M	323	9	3	1	1		14		1
95		F	326	7	2			1	10		
96	Softening of brain	M	19								
97		F	10								
98	Paralysis	M	52	3					3		1
99		F	58	1	1				2	1	
100	General paralysis of insane	M	99								
101		F	15								2
102	Other forms of mental disease	M	27								
103		F	30								
104	Other diseases of brain	M	52	7	2			1	10	3	
105		F	32	4		1			5	2	
106	Epilepsy	M	29	3					3	1	2
107		F	24	1			2		3	4	2
108	"Convulsions"	M	291	270	13	3	4		290	1	
109		F	219	198	11	4	2	1	216	2	1
110	Tetanus	M	64	23				1	24	3	10
111		F	17	10		1			11	2	
112	Other diseases of nervous system	M	44	5	4	1	1	1	12	5	1
113		F	32	2	2	1		2	7	5	2
114	III—DISEASES OF CIRCULATORY SYSTEM		2871	30	9	8	7	8	62	48	58
115	Males		1519	18	3	1	6	2	30	28	31
116	Females		1352	12	6	7	1	6	32	20	27

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
61	2	1	.....	2	2	1	9	15	9	14	7	8	1	6	.....	.....	.....	.....	61
62	1	3	5	5	8	9	13	11	10	14	15	10	4	2	2	.....	.....	.....	62
63	.....	2	7	15	30	42	49	41	23	28	22	9	6	1	1	.....	.....	.....	63
64	.....	.....	.....	4	5	14	17	17	18	6	10	6	3	3	1	.....	.....	.....	64
65	1	1	.....	.....	.....	1	2	2	2	.....	1	2	.....	3	.....	.....	.....	.....	65
66	.....	.....	.....	.....	1	.....	.....	.....	3	2	.....	1	.....	1	.....	.....	.....	.....	66
67	4	4	5	3	7	8	15	18	18	13	22	13	6	6	.....	2	.....	.....	67
68	2	2	4	5	5	5	11	10	16	7	4	9	4	2	2	.....	.....	.....	68
69	1	.....	.....	1	.....	.....	.....	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	69
70	.....	1	.....	.....	2	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	70
71	4	4	4	3	5	5	5	7	5	.....	3	1	2	1	1	.....	.....	.....	71
72	9	4	5	6	4	1	3	4	13	4	4	1	6	4	1	1	.....	.....	72
73	5	2	6	2	8	6	17	12	12	16	17	8	5	2	.....	.....	.....	.....	73
74	1	1	6	2	2	2	8	14	11	19	15	8	4	2	2	.....	.....	.....	74
75	3	4	1	5	3	6	7	8	7	10	7	3	1	1	.....	.....	.....	.....	75
76	2	.....	5	4	1	6	6	12	5	6	6	2	.....	.....	1	1	.....	.....	76
77	.....	1	3	4	11	14	12	7	2	3	5	.....	1	.....	.....	.....	.....	.....	77
78	.....	.....	2	2	1	4	2	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	78
79	.....	.....	.....	.....	2	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79
80	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	80
81	.....	2	1	1	.....	2	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	81
82	1	.....	.....	.....	1	.....	.....	.....	1	2	2	.....	.....	1	.....	.....	.....	.....	82
83	46	39	50	45	95	110	101	123	144	143	119	114	102	69	28	5	5	....	83
84	29	21	34	32	59	78	69	74	90	78	60	55	52	28	13	2	1	....	84
85	17	18	16	13	36	32	32	49	54	65	59	59	50	41	15	3	4	....	85
86	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	86
87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	87
88	19	10	8	9	4	4	1	3	3	2	4	.....	1	1	.....	.....	.....	.....	88
89	11	5	6	5	6	2	2	6	1	1	.....	1	.....	2	.....	.....	.....	.....	89
90	1	.....	1	1	3	7	4	9	8	4	7	.....	3	2	.....	.....	.....	.....	90
91	.....	.....	.....	.....	2	1	2	.....	1	3	1	1	.....	1	.....	.....	.....	.....	91
92	1	.....	3	.....	5	7	3	4	4	4	3	3	2	.....	.....	.....	.....	.....	92
93	1	1	1	1	1	2	2	3	1	4	3	.....	2	2	1	.....	.....	.....	93
94	1	2	3	4	11	23	25	34	36	40	33	39	31	15	9	1	1	....	94
95	1	1	2	3	12	14	19	26	36	41	43	46	33	23	12	2	2	....	95
96	.....	.....	.....	.....	3	2	3	.....	2	5	.....	.....	1	3	.....	.....	.....	.....	96
97	.....	.....	.....	.....	.....	1	.....	.....	1	.....	3	.....	3	1	1	.....	.....	.....	97
98	.....	.....	2	3	3	2	1	5	4	7	4	3	9	2	3	.....	.....	.....	98
99	.....	.....	.....	1	1	1	2	3	9	7	6	7	8	7	1	1	1	....	99
100	.....	.....	2	3	15	17	19	14	14	11	.....	4	.....	.....	.....	.....	.....	.....	100
101	.....	.....	.....	1	1	3	.....	2	2	2	1	.....	2	1	.....	.....	.....	.....	101
102	.....	.....	1	.....	2	3	.....	.....	4	1	3	5	3	1	1	1	.....	.....	102
103	1	1	.....	.....	2	.....	.....	3	1	3	1	2	2	3	.....	.....	1	.....	103
104	.....	4	7	3	2	5	5	2	5	1	2	1	1	1	.....	.....	.....	.....	104
105	2	3	1	.....	3	6	2	5	1	1	.....	1	.....	.....	.....	.....	.....	.....	105
106	4	1	2	3	2	.....	1	2	5	.....	.....	.....	1	2	.....	.....	.....	.....	106
107	.....	4	3	1	1	1	2	1	.....	.....	.....	1	.....	1	.....	.....	.....	.....	107
108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	108
109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	109
110	2	2	2	5	6	3	4	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	110
111	.....	2	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	111
112	1	2	3	1	3	4	3	1	2	3	3	.....	.....	.....	.....	.....	.....	.....	112
113	1	1	3	1	6	1	1	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	113
114	67	65	88	100	145	201	238	261	255	277	234	249	226	143	68	22	4	....	114
115	30	37	49	48	80	118	147	140	155	157	167	120	99	56	23	6	1	....	115
116	37	28	39	52	65	83	91	121	100	120	117	129	127	87	45	16	3	....	116

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	CAUSE OF DEATH		AGE							
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9
	III—DISEASES OF CIRCULATORY SYSTEM—Continued									
117	Pericarditis	M	18	1	.....	....	....	1	2	2
118		F	15	.....	.....	....	....	1	1	...
119	Endocarditis	M	349	3	1	1	3	...	8	7
120		F	352	1	3	3	....	2	9	8
121	Heart disease	M	812	6	.....	....	3	1	10	13
122		F	725	6	3	4	1	2	16	13
123	Angina pectoris	M	46	.....	1	....	....	....	1	2
124		F	21	.....	.....	....	....	....	.....	...
125	Diseases of arteries	M	267	.....	.....	....	....	....	.....	...
126		F	209	.....	.....	....	....	....	.....	1
127	Embolism and thrombosis	M	9	1	.....	....	....	....	1	...
128		F	7	.....	.....	....	....	....	.....	...
129	Diseases of veins	M	6	.....	.....	....	....	....	.....	...
130		F	8	.....	.....	....	....	....	.....	...
131	Diseases of lymphatics	M	2	1	.....	....	....	....	1	...
132		F	3	1	.....	....	....	1	2	...
133	Other diseases of circulatory system	M	10	6	1	....	....	....	7	1
134		F	12	4	.....	....	....	....	4	1
135	IV—DISEASES OF RESPIRATORY SYSTEM		5,837	1,317	547	239	123	68	2,294	136
136	Males		3,332	731	291	122	72	31	1,247	66
137	Females		2,505	586	256	117	51	37	1,047	70
138	Laryngitis	M	6	1	2	1	....	...	4	1
139		F	3	2	.....	....	....	1	3	...
140	Other diseases of larynx	M	8	1	2	2	1	....	6	...
141		F	3	1	.....	1	....	....	2	1
142	Diseases of thyroid body	M	7	....	.....	....	....	....	.....	...
143		F	23	...	.....	....	....	....	.....	...
144	Acute bronchitis	M	342	198	54	21	8	5	286	3
145		F	318	148	50	19	6	4	227	1
146	Chronic bronchitis	M	59	3	2	1	....	....	6	1
147		F	68	5	2	....	....	....	7	...
148	Broncopneumonia	M	509	219	95	29	17	8	368	14
149		F	485	170	86	35	9	11	311	13
150	Pneumonia (lobar and unqualified)	M	2,270	289	134	66	46	18	553	45
151		F	1,489	242	116	59	36	19	472	51
152	Pleurisy	M	45	2	1	1	....	....	4	...
153		F	34	.....	.....	3	....	1	4	4
154	Congestion of lungs	M	34	14	1	1	....	....	16	1
155		F	36	15	2	....	....	1	18	...
156	Gangrene of lungs	M	2	.....	.....	....	....	....	.....	...
157		F	...	.....	.....	....	....	....	.....	...
158	Asthma and emphysema	M	32	.....	.....	....	....	....	.....	1
159		F	36	2	.....	....	....	....	2	...
160	Hemorrhage of lungs	M	9	2	.....	....	....	....	2	...
161		F	3	1	.....	....	....	....	1	...
162	Other diseases of respiratory system	M	9	2	.....	....	....	....	2	...
163		F	7	.....	.....	....	....	....	.....	...
164	V—DISEASES OF DIGESTIVE SYSTEM		4,419	2,232	459	100	45	30	2,866	69
165	Males		2,403	1,261	231	53	27	17	1,589	31
166	Females		2,016	971	228	47	18	13	1,277	38
167	Diseases of mouth	M	4	3	1	....	....	....	4	...
168		F	4	3	.....	....	....	....	3	1
169	Tonsillitis	M	4	.....	1	....	....	....	1	1
170		F	5	2	.....	....	1	....	3	...
171	Other diseases of pharynx	M	4	1	2	....	....	....	3	...
172		F	2	.....	.....	....	....	....	.....	...

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
117	....	2	.....	.....	.....	2	2	.....	1	3	.....	1	2	....	....	....	....	....	117
118	....	.....	1	.....	2	2	.....	3	.....	1	1	.....	2	....	....	....	....	....	118
119	9	12	15	13	21	29	43	34	31	29	29	28	18	9	6	1	....	....	119
120	10	14	10	17	21	22	20	20	24	28	27	33	30	17	8	8	....	....	120
121	19	23	28	30	50	64	80	78	97	94	90	52	35	21	7	2	....	....	121
122	22	12	25	31	38	56	59	76	64	67	63	56	52	33	13	4	1	....	122
123	....	.....	1	1	1	7	2	4	6	4	6	4	5	2	....	....	....	....	123
124	....	2	.....	.....	1	1	4	.....	1	3	1	1	3	3	1	....	....	....	124
125	1	.....	4	2	5	15	20	23	20	24	41	36	38	24	10	3	1	....	125
126	....	.....	.....	3	2	1	6	8	10	19	24	34	38	34	23	4	2	....	126
127	....	.....	1	.....	1	.....	.....	1	.....	2	1	1	1	....	....	....	....	....	127
128	....	.....	1	.....	.....	1	.....	4	1	.....	.....	.....	.....	....	....	....	....	....	128
129	....	.....	.....	2	2	1	.....	.....	.....	1	.....	.....	.....	....	....	....	....	....	129
130	....	.....	1	.....	1	.....	2	.....	.....	2	1	.....	1	....	....	....	....	....	130
131	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	131
132	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	132
133	4	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1	....	....	....	....	....	133
134	75	144	140	220	261	318	296	281	243	287	282	223	232	176	87	26	9	....	134
135	43	86	95	141	190	234	207	193	150	162	144	136	98	77	33	9	3	....	135
136	32	58	45	79	71	84	89	88	93	125	138	156	134	99	54	17	6	....	136
137	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	137
138	....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	....	....	....	....	....	138
139	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	139
140	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	140
141	....	.....	1	1	3	.....	1	1	.....	.....	.....	.....	.....	....	....	....	....	....	141
142	1	7	.....	5	.....	3	1	.....	3	1	1	1	.....	....	....	....	....	....	142
143	1	.....	.....	.....	2	5	3	3	2	3	6	6	3	10	7	1	....	....	143
144	1	2	1	.....	1	.....	1	4	1	10	10	19	16	14	5	4	1	....	144
145	....	1	.....	.....	1	1	.....	2	4	6	4	10	13	8	2	....	....	....	145
146	....	.....	.....	1	1	1	.....	1	4	5	5	13	11	12	5	1	1	....	146
147	1	4	5	6	4	10	11	11	14	10	12	13	10	8	3	2	1	....	147
148	6	4	3	7	3	3	6	6	13	10	20	19	28	15	10	2	2	....	148
149	37	76	87	129	173	208	178	169	122	132	116	101	63	42	20	5	2	....	149
150	22	41	37	64	62	73	74	71	66	87	92	97	72	53	30	9	1	....	150
151	2	3	1	2	1	4	8	4	4	4	3	1	1	1	....	....	....	....	151
152	2	2	1	.....	.....	2	3	3	.....	5	5	1	2	....	....	....	....	....	152
153	1	.....	.....	.....	1	.....	1	1	2	1	2	.....	4	2	....	1	....	....	153
154	....	1	2	.....	1	.....	1	1	1	1	1	1	3	1	3	....	....	....	154
155	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	....	....	....	....	....	155
156	....	.....	1	.....	2	3	2	1	1	5	1	4	3	6	1	....	....	....	156
157	....	.....	.....	1	1	1	2	2	4	6	3	5	2	4	1	1	1	....	157
158	....	.....	.....	2	1	2	.....	1	1	.....	.....	.....	.....	....	....	....	....	....	158
159	....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	....	....	159
160	....	2	.....	1	1	1	1	.....	.....	.....	.....	1	.....	....	....	....	....	....	160
161	....	.....	1	1	2	1	1	.....	.....	.....	1	.....	.....	....	....	....	....	....	161
162	....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	....	....	....	....	....	162
163	63	88	83	94	118	151	129	143	105	127	108	87	64	37	26	7	4	....	163
164	35	51	40	48	61	90	73	83	65	65	56	39	23	12	8	4	1	....	164
165	28	37	43	46	57	61	56	60	40	62	52	48	41	25	18	3	3	....	165
166	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	166
167	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	....	....	....	....	....	167
168	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	168
169	....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	169
170	....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	....	....	....	....	....	170
171	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	171
172	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	172

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	CAUSE OF DEATH		AGE								
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	V—DISEASES OF DIGESTIVE SYSTEM—Continued										
173	Ulcer of stomach	M	44	.....	1	....	....	....	1	....	....
174		F	41	2	.....	....	2	....	4	....	....
175	Gastritis	M	116	61	6	3	1	2 2	73	1	....
176		F	111	42	10	4	....		58	3	....
177	Other diseases of stomach	M	20	14	.....	....	....	....	14	....	....
178		F	19	10	1	....	....	....	11	....	....
179	Dentition	M	.....	.....	.....	....	....	....	.....	....	....
180		F	1	1	.....	....	....	....	1	....	....
181	Diarrhea and enteritis	M	1,524	1,141	214	46	24	6	1,431	12	....
182		F	1,281	884	212	37	13	6	1,152	16	....
183	Hernia	M	45	5	.....	....	....	1	6	....	....
184		F	57	1	.....	....	....	....	1	....	....
185	Obstruction of intestines	M	86	29	4	3	....	1	37	3	....
186		F	94	15	3	3	1	1	23	3	....
187	Other diseases of intestines	M	9	3	.....	....	....	....	3	....	....
188		F	12	5	.....	....	....	....	5	....	....
189	Acute yellow atrophy of liver	M	4	.....	.....	....	....	1	1	....	....
190		F	5	.....	.....	....	....	....	.....	....	....
191	Hydatid tumors of liver	M	.....	.....	.....	....	....	....	.....	....	....
192		F	.....	.....	.....	....	....	....	.....	....	....
193	Cirrhosis of liver	M	272	1	.....	....	1	....	2	1	....
194		F	114	1	.....	....	....	....	1	....	....
195	Biliary calculi	M	16	.....	.....	....	....	....	.....	....	....
196		F	56	.....	.....	....	....	....	.....	....	....
197	Other diseases of liver	M	40	2	1	....	....	....	3	1	....
198		F	37	4	1	....	....	....	5	....	....
199	Diseases of spleen	M	4	.....	.....	....	....	....	.....	....	....
200		F	.....	.....	.....	....	....	....	.....	....	....
201	Peritonitis	M	17	1	.....	....	....	1	2	....	....
202		F	25	.....	.....	2	....	....	2	1	....
203	Appendicitis	M	188	.....	1	1	1	5	8	12	1
204		F	145	1	1	1	1	4	8	14	....
205	Other diseases of digestive system	M	6	.....	.....	....	....	....	.....	....	....
206		F	7	.....	.....	....	....	....	.....	....	....
207	VI—DISEASES OF GENITO-URINARY SYSTEM		2,829	44	13	11	11	13	92	36	1
208	Males		1,598	29	6	4	6	4	49	16	1
209	Females		1,231	15	7	7	5	9	43	20	....
210	Acute nephritis	M	185	17	3	3	2	1	26	9	....
211		F	156	9	4	4	3	5	25	9	....
212	Bright's disease	M	1,283	9	3	1	4	3	20	7	....
213		F	872	5	3	3	2	4	17	11	....
214	Other diseases of kidneys	M	21	2	.....	....	....	....	2	....	....
215		F	7	.....	.....	....	....	....	.....	....	....
216	Calculi of urinary tract	M	10	.....	.....	....	....	....	.....	....	....
217		F	4	.....	.....	....	....	....	.....	....	....
218	Diseases of bladder	M	27	1	.....	....	....	....	1	....	....
219		F	9	.....	.....	....	....	....	.....	....	....
220	Uterine Tumor	F	52	.....	.....	....	....	....	.....	....	....
221	Other diseases of uterus	F	26	.....	.....	....	....	....	.....	....	....
222	Ovarian tumor	F	31	.....	.....	....	....	....	.....	....	....
223	Diseases of tubes	F	72	.....	.....	....	....	....	.....	....	....
224	Other diseases of genito-urinary system	M	72	.....	.....	....	....	....	.....	....	....
225		F	2	1	.....	....	....	....	1	....	....
226	VII—CHILDBIRTH		325	.....	.....	....	....	....	.....	....	....
227	Puerperal septicemia	F	197	.....	.....	....	....	....	.....	....	....
228	Puerperal convulsions	F	47	.....	.....	....	....	....	.....	....	....
229	Other causes incident to childbirth	F	81	.....	.....	....	....	....	.....	....	....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
173	3	4	.....	2	7	3	7	7	2	2	4	1	1	....	....	....	....	....	173
174	3	4	6	1	5	5	4	3	.....	1	2	2	1	....	....	....	....	....	174
175	....	.....	2	5	2	3	5	2	6	3	4	5	2	2	1	....	....	....	175
176	....	1	4	3	1	3	3	2	3	2	7	6	6	....	4	2	2	....	176
177	....	.....	.....	.....	.....	.....	1	.....	2	.....	.....	2	.....	1	.....	....	....	....	177
178	....	....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	2	....	3	....	1	....	178
179	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	....	....	179
180	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	....	....	180
181	2	3	2	5	6	8	7	7	6	7	5	7	6	3	5	....	1	....	181
182	3	3	1	3	2	4	11	4	6	12	16	10	12	12	9	....	....	....	182
183	....	2	2	1	1	1	3	•7	2	6	8	3	1	1	....	1	....	....	183
184	....	.....	.....	2	5	6	6	8	3	9	9	2	1	4	....	1	....	....	184
185	....	3	5	2	2	2	3	4	5	5	5	1	3	2	1	....	....	....	185
186	1	5	6	4	9	6	4	2	4	4	5	5	7	3	1	....	....	....	186
187	....	1	.....	.....	.....	2	2	.....	.....	.....	.....	1	.....	....	....	....	....	....	187
188	....	1	.....	1	.....	.....	1	.....	1	.....	1	1	1	....	....	....	....	....	188
189	1	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	....	....	....	....	....	189
190	....	1	.....	.....	2	.....	1	.....	.....	1	.....	.....	.....	....	....	....	....	....	190
191	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	191
192	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	192
193	2	2	6	5	25	48	34	43	26	31	25	11	6	2	1	2	....	....	193
194	1	1	5	7	12	15	14	19	6	11	5	9	5	3	....	....	....	....	194
195	....	.....	1	.....	2	1	2	3	2	1	1	3	.....	....	....	....	....	....	195
196	....	1	.....	4	3	5	4	7	6	14	5	4	3	....	....	....	....	....	196
197	1	1	3	1	2	4	3	2	6	7	2	2	2	....	....	....	....	....	197
198	....	1	1	8	2	4	1	3	3	1	1	3	.....	3	1	....	....	....	198
199	....	1	.....	1	1	.....	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	199
200	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	200
201	....	1	.....	3	2	3	.....	1	.....	.....	1	1	1	....	....	1	....	....	201
202	3	.....	3	2	1	2	1	1	3	4	.....	2	.....	....	....	....	....	....	202
203	25	33	18	22	11	14	3	5	8	2	1	1	.....	1	....	....	....	....	203
204	17	19	17	8	12	11	5	11	4	2	.....	3	2	....	....	....	....	....	204
205	....	.....	.....	1	.....	.....	2	2	.....	1	.....	.....	.....	....	....	....	....	....	205
206	....	.....	.....	3	2	.....	.....	.....	1	.....	.....	.....	1	....	....	....	....	....	206
207	29	79	116	154	193	226	266	254	276	287	242	207	183	99	46	9	8	....	207
208	15	28	40	77	98	130	160	146	168	173	162	119	112	58	29	2	1	....	208
209	14	51	76	77	95	96	106	108	108	114	80	88	71	41	17	7	7	....	209
210	3	5	5	10	18	16	11	17	13	10	10	9	8	8	4	....	....	....	210
211	3	10	12	8	9	8	15	11	6	12	9	7	5	....	1	1	....	....	211
212	11	22	34	61	76	111	143	123	139	150	136	93	79	44	20	2	1	....	212
213	11	19	36	35	47	61	72	86	94	96	69	78	66	39	16	5	7	....	213
214	1	1	.....	2	3	.....	3	2	1	2	1	2	.....	....	....	....	....	....	214
215	....	1	.....	1	1	1	.....	2	1	.....	.....	.....	.....	....	....	....	....	....	215
216	....	.....	.....	2	.....	1	1	.....	2	.....	1	.....	2	1	....	....	....	....	216
217	....	.....	.....	.....	.....	.....	.....	1	2	1	.....	.....	.....	....	....	....	....	....	217
218	....	.....	.....	.....	.....	1	.....	1	3	4	.....	2	10	2	3	....	....	....	218
219	....	1	.....	1	.....	.....	1	1	1	2	.....	.....	.....	1	....	1	....	....	219
220	....	.....	2	8	10	13	7	4	3	2	.....	2	.....	1	....	....	....	....	220
221	....	6	3	6	5	2	2	.....	.....	.....	1	1	.....	....	....	....	....	....	221
222	....	2	3	3	9	4	5	2	1	1	1	.....	.....	....	....	....	....	....	222
223	....	11	20	15	14	7	4	1	.....	.....	.....	.....	.....	....	....	....	....	....	223
224	....	.....	1	2	1	1	2	3	10	7	14	13	13	3	2	....	....	....	224
225	....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	225
226	20	82	68	66	64	21	4	.....	.....	.....	.....	.....	.....	....	....	....	....	....	226
227	13	61	38	32	39	13	1	.....	.....	.....	.....	.....	.....	....	....	....	....	....	227
228	5	13	8	10	8	3	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	228
229	2	8	22	24	17	5	3	.....	.....	.....	.....	.....	.....	....	....	....	....	....	229

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	Cause of Death		Age								
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
230	VIII—Diseases of Skin		70	10	2	....	....	....	12	1	....
231	Males		44	6	1	....	....	....	7	1	....
232	Females		26	4	1	...	....	....	5	....	....
233	Gangrene	M	21	.....	.....	....	....	....	.....	....	....
234		F	11	.....	.....	....	....	....	.....	....	....
235	Carbuncle	M	3	.....	.....	....	....	....	.....	....	....
236		F	2	1	.....	....	....	....	1	....	....
237	Abscess	M	9	1	.....	....	....	....	1	1	....
238		F	7	2	1	....	....	....	3	....	....
239	Other diseases of skin	M	11	5	1	....	....	....	6	....	....
240		F	6	1	.....	....	....	....	1	....	....
241	IX—Diseases of Locomotor System		96	24	19	3	3	2	51	6	1
242	Males		62	15	14	1	2	2	34	5	1
243	Females		34	9	5	2	1	....	17	1	....
244	Diseases of bones	M	54	15	14	1	2	1	33	5	1
245		F	30	8	5	2	1	....	16	1	....
246	Diseases of joints	M	8	.....	.....	....	....	1	1	....	....
247		F	4	1	.....	....	....	....	1	....	....
248	Other diseases of locomotor system	M	.....	... ..	.....	....	....	....	.....	....	....
249		F	.....	.....	.....	....	....	....	.....	....	....
250	X—Malformations		204	196	5	1	1	....	203	1	....
251	Males		112	108	3	....	1	...	112	....	....
252	Females		92	88	2	1	....	....	91	1	....
253	Hydrocephalus	M	3	3	.....	....	....	....	3	....	....
254		F	4	3	1	....	...	....	4	....	....
255	Congenital malformation of heart (cyanosis)	M	69	69	.....	....	....	....	69	....	....
256		F	47	46	.....	....	....	....	46	1	....
257	Other congenital malformations	M	40	36	3	....	1	....	40	....	....
258		F	41	39	1	1	....	....	41	....	....
259	XI—Diseases of Early Infancy		1,194	1,194	.....	....	....	....	1,194	....	....
260	Males		647	647	.....	....	....	....	647	....	....
261	Females		547	547	.....	....	....	....	547	....	....
262	Premature birth	M	335	335	.....	....	....	....	335	....	....
263		F	312	312	.....	....	....	....	312	....	....
264	Congenital debility	M	312	312	.....	....	....	....	312	....	....
265		F	235	235	.....	....	....	....	235	....	....
266	XII—Old Age		171	.....	.....	....	....	....	.....	....	....
267	Males	M	50	.....	.....	....	....	....	.....	....	....
268	Females	F	121	.....	.....	....	....	....	.....	....	....
269	XIII—Violence		2,491	264	43	32	29	21	389	79	6
270	Males		1,953	158	22	20	14	10	224	59	5
271	Females		538	106	21	12	15	11	165	20	1
272	Suicide	M	331	.....	.....	....	....	....	.....	....	....
273		F	76	.....	.....	....	....	....	.....	....	....
274	Fractures and dislocations	M	13	.....	.....	....	....	....	.....	....	....
275		F	5	.....	.....	....	....	....	.....	....	....
276	Burns and scalds	M	62	4	11	12	6	1	34	8	1
277		F	84	2	12	6	7	6	33	11	1

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

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220	....	.....	3	5	3	2	1	4	6	6	4	7	6	3	6	1	....	....	220
221	....	.....	1	3	2	.....	1	3	4	5	3	6	3	2	2	1	....	....	221
222	....	.....	2	2	1	2	.....	1	2	1	1	1	3	1	4	....	....	..	222
223	....	.....	.....	1	.....	.....	.....	2	1	4	1	6	3	2	....	1	....	....	223
224	....	.....	1	.....	.....	.....	.....	1	.....	1	.....	1	3	1	3	....	....	....	224
225	....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	....	1	....	....	..	225
226	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	226
227	....	.....	1	2	1	.....	.....	.....	2	1	.....	.....	.....	....	....	....	....	....	227
228	....	.....	1	1	.....	1	.....	.....	1	.....	.....	.....	.....	....	....	....	....	....	228
229	....	.....	.....	.....	1	.....	1	1	.....	.....	1	.....	.....	....	1	....	....	....	229
230	....	.....	.....	1	.....	1	.....	.....	1	.....	1	.....	.....	....	1	....	....	....	230
231	5	5	2	1	5	1	3	4	1	3	3	4	.....	....	....	....	....	....	231
232	4	3	1	1	3	.....	2	2	1	1	2	1	.....	....	....	....	....	....	232
233	1	2	1	.....	2	1	1	2	.....	2	1	3	.....	....	....	....	....	....	233
234	3	2	1	1	2	.....	1	2	1	1	.....	.....	.....	....	....	....	....	....	234
235	1	2	1	.....	1	.....	1	1	.....	2	1	3	.....	....	....	....	....	....	235
236	1	1	.....	.....	1	.....	1	.....	.....	.....	2	1	.....	...	....	....	....	....	236
237	....	.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	.....	....	....	....	....	....	237
238	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	238
239	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	239
240	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	240
241	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	241
242	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	242
243	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	243
244	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	244
245	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	245
246	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	246
247	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	247
248	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	248
249	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	249
250	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	250
251	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	251
252	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	252
253	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	253
254	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	254
255	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	255
256	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	256
257	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	257
258	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	258
259	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	259
260	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	260
261	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	261
262	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	262
263	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	263
264	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	264
265	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	265
266	....	.....	.....	.....	.....	.....	.....	.....	.....	4	9	27	24	42	35	18	12	....	266
267	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	9	11	9	9	4	3	....	267
268	....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	18	13	33	26	14	9	....	268
269	128	236	235	199	189	232	235	148	122	78	66	53	26	16	6	1	....	1	269
270	97	183	207	160	161	202	196	129	96	66	55	37	13	10	3	1	....	1	270
271	31	44	28	39	28	30	39	19	26	12	11	16	13	6	3	....	....	....	271
272	2	28	33	22	33	42	50	27	21	20	14	11	4	3	....	....	....	....	272
273	10	14	4	12	7	8	7	8	4	1	.....	.....	.....	.....	1	....	....	....	273
274	....	1	1	.....	1	.....	2	2	1	1	1	.....	1	1	....	1	....	....	274
275	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	3	1	....	....	....	275
276	....	1	3	2	1	2	1	4	.....	1	.....	1	.....	.....	.....	....	....	....	276
277	4	7	3	1	5	3	6	1	.....	2	2	2	2	....	....	....	....	....	277

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	CAUSE OF DEATH		AGE								
			All Ages	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	XIII—VIOLENCE—Continued.										
278	Heat and sunstroke	M	5					1	1		
279		F	4		1				1		
280	Cold and freezing	M	4								
281		F									
282	Lightning	M	1								
283		F	1								
284	Drowning	M	119	2			2		4	5	14
285		F	16	1					1	1	3
286	*Inhalation of poisonous gases	M	109	2				1	3	2	
287		F	47		2				2	1	1
288	Other accidental poisonings	M	19	1	1	1	1		4	2	
289		F	19				2	1	3		
290	Accidental gunshot wounds	M	19					1	1	4	
291		F	5					1	1		1
292	Injuries by machinery	M	64								
293		F	2								
294	Injuries in mines and quarries	M									
295		F									
296	Railroad accidents and injuries	M	303			1			1	3	6
297		F	13	1					1		
298	Street car accidents	M	167				3	3	6	10	10
299		F	30			2	2		4	2	
300	Injuries by vehicles and horses	M	75			3		2	5	14	
301		F	16		2	1		2	5	1	
302	Automobile accidents	M	11							1	
303		F	4								
304	Suffocation	M	17	8	1				9		
305		F	9	6		1	2		9		
306	Other accidental injuries	M	368	1	9	3	1	1	15	9	6
307		F	68	2	4	2	2	1	11	3	
308	Injuries at birth	M	121	121					121		
309		F	79	79					79		
310	Homicide	M	145	19			1		20	1	
311		F	60	15					15	1	
312	XIV—ILL-DEFINED CAUSES		229	187	12	3	5		207		
313	Males		120	101	5	2			108		
314	Females		10	86	7	1	5		99		
315	"Dropsy"	M	2								
316		F	3	1					1		
317	"Heart failure"	M	3								
318		F	1								
319	Other ill-defined causes	M	115	101	5	2			108		
320		F	105	85	7	1	5		98		
321	Unknown causes	M									
322		F									

*Includes conflagration.

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1907.

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 30	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
278	....	.....	1	1	.....	.....	.....	.....	1	.....	.....	1	.....	....	....	....	....	....	278
279	....	.....	.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....	....	....	....	....	....	279
280	....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	280
281	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	281
282	....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	282
283	....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	283
284	9	11	11	8	7	11	14	8	6	4	4	3	.....	....	....	....	....	....	284
285	1	2	.....	3	.....	2	.....	3	.....	.....	.....	.....	.....	....	....	....	....	....	285
286	3	11	16	12	11	10	12	6	8	6	4	4	1	....	....	....	....	....	286
287	5	5	9	3	5	.....	6	1	1	2	2	2	.....	1	1	....	....	....	287
288	..	.....	2	1	3	2	3	2	.....	.....	.....	.....	.....	....	....	....	....	....	288
289	2	2	2	4	.....	.....	3	.....	2	.....	.....	.....	1	....	....	....	....	....	289
290	4	1	4	1	2	1	1	.....	.....	.....	.....	.....	.....	....	....	....	....	....	290
291	....	2	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	291
292	9	8	9	8	8	7	5	3	1	.....	1	1	1	....	....	....	....	....	292
293	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	293
294	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	294
295	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	295
296	21	45	47	28	33	31	28	18	15	11	7	6	.....	....	....	....	....	....	296
297	....	2	1	2	1	2	1	1	.....	1	1	.....	.....	....	....	....	....	....	297
298	5	13	17	11	14	22	15	9	14	5	6	1	2	3	....	....	....	....	298
299	2	2	.....	.....	.....	1	5	2	5	1	2	1	3	....	....	....	....	....	299
300	2	4	2	9	10	4	9	5	2	1	4	.....	1	....	2	....	....	....	300
301	....	.....	.....	1	.....	2	2	.....	1	1	.....	2	.....	....	....	....	....	....	301
302	1	1	.....	.....	.....	2	.....	1	.....	.....	3	.....	.....	1	....	....	....	....	302
303	....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	1	.....	....	....	....	....	....	303
304	1	3	.....	1	.....	1	.....	1	.....	1	.....	.....	.....	....	....	....	....	....	304
305	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	305
306	14	27	41	28	33	53	45	36	21	16	10	8	3	1	1	....	....	1	306
307	2	1	.....	4	2	5	6	1	10	4	4	7	6	2	....	....	....	....	307
308	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	308
309	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	309
310	16	28	19	18	4	12	11	7	6	.....	1	.....	.....	1	....	....	....	....	310
311	4	6	8	7	8	5	1	2	1	.....	.....	.....	1	....	....	....	....	....	311
312	....	1	.....	.....	.....	.....	.....	.....	5	1	2	5	1	3	2	1	1	....	312
313	....	1	.....	.....	.....	.....	.....	.....	4	.....	1	1	1	1	2	1	....	....	313
314	....	.....	.....	.....	.....	.....	.....	.....	1	1	1	4	.....	2	....	....	1	....	314
315	....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	....	....	....	....	....	315
316	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	....	....	1	....	316
317	....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	....	....	1	....	....	317
318	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	318
319	....	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1	1	2	....	....	....	319
320	....	.....	.....	.....	.....	.....	.....	.....	1	1	1	3	.....	1	....	....	....	....	320
321	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	321
322	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	322

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MORTALITY STATISTICS

1908

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.

Calendar Year, 1908.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE							
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
1	All causes		30,388	29,384	1,004	6,888	1,453	622	401	279	9,643	763	430
2	Males		17,106	16,535	571	3,823	785	314	193	151	5,266	396	226
3	Females		13,282	12,849	433	3,065	668	308	208	128	4,377	367	204
4	I—GENERAL DISEASES		8,535	8,142	393	487	358	248	202	159	1,454	381	152
5	Males		4,755	4,514	241	264	200	112	98	87	761	191	69
6	Females		3,780	3,628	152	223	158	136	104	72	693	190	83
7	Typhoid fever	M	202	195	7	1	5	3	1	1	11	7	8
8		F	130	128	2	2	2	....	3	6	13	14	10
9	Malarial fever	M	7	6	1	1	.....	....	....	....	1	....	....
10		F	4	4	.....	.....	.....	....	....	....	.....	....	....
11	Smallpox	M	.....	.....	.....	.....	.....	....	....	....	.....	....	....
12		F	.....	.....	.....	.....	.....	....	....	....	.....	....	....
13	Measles	M	91	90	1	28	33	12	4	2	79	10	1
14		F	78	77	1	22	21	9	6	7	65	12	....
15	Scarlet fever	M	203	203	.....	12	32	24	30	28	126	53	12
16		F	207	205	2	12	31	41	33	22	139	52	7
17	Whooping cough	M	67	64	3	30	23	4	5	3	65	2	....
18		F	67	63	4	33	20	9	2	2	66	1	....
19	Diphtheria	M	284	282	2	32	47	36	40	31	186	69	11
20		F	225	225	.....	15	37	42	34	19	147	62	11
21	Croup	M	28	28	.....	.....	10	5	3	3	21	6	....
22		F	18	18	.....	2	3	1	6	4	16	2	....
23	Influenza	M	152	141	11	19	3	6	....	5	33	4	4
24		F	182	175	7	10	4	3	2	1	20	4	4
25	Cholera nostras	M	8	8	.....	.....	1	1	....	....	2	1	1
26		F	5	5	.....	1	.....	....	....	....	1	....	....
27	Dysentery	M	50	48	2	10	4	1	....	....	15	1	....
28		F	51	48	3	20	2	1	....	....	23	1	....
29	Erysipelas	M	48	48	.....	15	.....	....	....	....	15	....	....
30		F	43	43	.....	20	1	....	....	....	21	....	....
31	Other epidemic diseases	M	1	1	.....	1	.....	....	....	....	1	....	....
32		F	.....	.....	.....	.....	.....	....	....	....	.....	....	....
33	Septicemia	M	27	26	1	4	1	....	....	....	5	1	....
34		F	12	12	.....	1	1	....	....	....	2	....	....
35	Tuberculosis of lungs	M	2,166	2,002	164	16	12	5	3	1	37	5	11
36		F	1,252	1,169	83	12	13	8	9	2	44	15	27
37	Tuberculosis of larynx	M	16	15	1	.....	.....	....	....	....	.....	....	....
38		F	8	8	.....	.....	.....	....	....	....	.....	....	....
39	Tuberculous meningitis	M	109	103	6	27	19	10	4	5	65	10	6
40		F	97	95	2	23	16	13	5	5	62	10	7
41	Abdominal tuberculosis	M	58	51	7	4	3	....	....	1	8	4	....
42		F	63	59	4	5	2	3	....	....	10	2	1
43	Pott's disease	M	24	24	.....	.....	.....	1	2	2	5	2	2
44		F	20	18	2	1	1	1	....	....	3	1	3
45	Tuberculous abscess	M	2	2	.....	.....	.....	....	1	....	1	1	....
46		F	3	3	.....	1	.....	....	....	....	1	....	....
47	White swelling	M	6	6	.....	.....	.....	....	....	....	.....	....	....
48		F	4	4	.....	.....	.....	....	....	....	.....	1	....
49	Tuberculosis of other organs	M	21	21	.....	2	.....	2	2	1	7	1	1
50		F	22	21	1	2	1	....	....	1	4	2	1
51	General tuberculosis	M	22	21	1	1	1	1	....	....	3	....	....
52		F	20	18	2	2	.....	....	2	....	4	3	....
53	Scrofula	M	1	1	.....	1	.....	....	....	....	1	....	....
54		F	1	1	.....	.....	1	....	....	....	1	....	....
55	Venereal diseases	M	118	107	11	57	4	....	....	....	61	....	....
56		F	63	58	5	35	2	....	....	....	37	1	....
57	Cancer of mouth	M	38	38	.....	.....	.....	....	....	....	.....	....	....
58		F	8	8	.....	.....	.....	....	....	....	.....	....	....
59	Cancer of stomach and liver	M	374	369	5	1	.....	....	....	1	2	....	....
60		F	293	289	4	.....	.....	....	....	....	.....	....	....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.

Calendar Year, 1908.

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
1	763	1,241	1,304	1,386	1,682	1,686	1,839	1,699	1,608	1,586	1,368	1,243	990	673	347	94	38	5	1
2	405	667	730	798	1,014	1,091	1,176	1,064	960	933	752	658	477	308	138	29	14	4	2
3	358	574	574	588	668	595	663	635	648	653	616	585	513	365	209	65	24	1	3
4	385	647	615	596	671	680	663	562	462	417	331	237	147	85	34	10	6	....	4
5	178	362	363	350	396	434	409	340	258	235	178	114	68	35	10	1	3	....	5
6	207	285	252	246	275	246	254	222	204	182	153	123	79	50	24	9	3	....	6
7	24	35	30	26	14	18	10	3	6	4	3	1	2	....	....	....	....	....	7
8	19	16	9	13	12	7	4	6	1	3	2	1	.....	....	....	....	....	....	8
9	....	1	.....	1	.....	1	1	.....	.....	1	.....	.....	1	....	....	....	....	....	9
10	....	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....	1	....	....	....	....	....	10
11	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	11
12	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	12
13	....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	13
14	....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	14
15	2	3	3	1	1	.....	1	.....	.....	.....	.....	.....	1	....	....	....	....	....	15
16	1	5	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	16
17	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	17
18	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	18
19	4	6	.....	5	.....	2	.....	.....	.....	1	.....	.....	.....	....	....	....	....	....	19
20	1	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	20
21	....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	21
22	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	22
23	2	2	8	5	4	10	8	9	6	9	11	10	13	9	4	....	1	....	23
24	4	3	4	2	6	9	5	11	16	14	18	15	16	18	9	4	....	....	24
25	....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	25
26	....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	2	....	....	....	....	....	26
27	1	.....	1	1	2	3	1	5	1	4	5	5	.....	3	2	....	....	....	27
28	....	1	1	1	1	2	3	1	2	4	3	3	3	2	....	....	....	....	28
29	1	.....	2	2	3	7	6	2	1	2	1	4	2	....	....	....	....	....	29
30	1	3	4	.....	.....	.....	1	1	3	3	1	3	1	....	1	....	....	....	30
31	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	31
32	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	32
33	....	1	2	2	5	1	2	4	4	.....	.....	.....	.....	....	....	....	....	....	33
34	....	3	1	.....	1	2	.....	1	1	1	.....	.....	.....	....	....	....	....	....	34
35	105	254	269	246	295	288	240	171	98	67	50	16	8	6	....	....	....	....	35
36	152	205	180	156	149	95	72	51	34	26	25	8	10	3	....	....	....	....	36
37	....	4	3	2	1	1	2	2	1	.....	.....	.....	.....	....	....	....	....	....	37
38	....	3	1	1	1	.....	1	.....	1	.....	.....	.....	.....	....	....	....	....	....	38
39	6	7	4	2	2	5	1	1	.....	.....	.....	.....	.....	....	....	....	....	....	39
40	1	2	9	2	3	.....	1	.....	.....	.....	.....	.....	.....	....	....	....	....	....	40
41	4	7	7	5	3	3	5	8	1	2	.....	1	.....	....	....	....	....	....	41
42	1	8	6	8	8	3	1	4	6	1	2	1	1	....	....	....	....	....	42
43	3	5	2	.....	1	1	.....	.....	.....	.....	.....	.....	1	1	....	....	....	....	43
44	1	1	.....	2	.....	.....	.....	4	.....	4	.....	1	.....	....	....	....	....	....	44
45	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	45
46	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	....	....	....	....	....	46
47	1	2	2	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	....	....	....	....	....	47
48	....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	.....	....	....	....	....	....	48
49	....	.....	1	2	3	1	2	.....	1	.....	1	1	.....	....	....	....	....	....	49
50	1	4	1	2	2	2	2	1	.....	.....	.....	.....	.....	....	....	....	....	....	50
51	2	3	.....	2	1	2	3	3	.....	2	1	.....	.....	....	....	....	....	....	51
52	2	1	2	3	.....	1	.....	2	.....	1	.....	.....	.....	....	....	....	1	....	52
53	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	53
54	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	54
55	....	4	3	6	6	8	13	5	5	3	2	2	.....	....	....	....	....	....	55
56	1	5	1	1	6	7	3	1	.....	.....	.....	.....	.....	....	....	....	....	....	56
57	....	.....	.....	.....	2	3	3	5	7	6	6	4	1	1	....	....	....	....	57
58	....	.....	.....	.....	1	1	1	1	.....	1	1	.....	1	....	....	....	1	....	58
59	....	.....	4	5	18	19	49	57	58	62	42	32	18	7	....	1	....	....	59
60	1	1	1	5	13	21	39	37	44	41	40	26	15	6	3	....	....	....	60

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE							
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	I—GENERAL DISEASES—Continued												
61	Cancer of intestines	M	90	88	2	.....	.....	....	....	....	.....	....	....
62		F	101	98	3	.....	.....	....	....	....	.....	....	....
63	Cancer of female genital organs	F	247	233	14	1	.....	1	....	....	2	....	....
64	Cancer of breast	F	130	124	6	.....	.....	....	....	....	.....	....	....
65	Cancer of skin	M	11	11	.....	.....	.....	....	....	....	.....	....	....
66		F	12	12	.....	.....	.....	....	....	....	.....	....	....
67	Cancer of other or unspecified organs	M	172	168	4	2	2	1	....	....	5	1	2
68		F	95	95	.....	.....	.....	1	1	1	3	1	2
69	Tumor	M	2	2	.....	.....	.....	....	....	....	.....	....	....
70		F	3	3	.....	.....	.....	....	....	....	.....	....	....
71	Rheumatism	M	89	83	6	.....	.....	....	2	3	5	10	4
72		F	74	71	3	.....	.....	1	1	1	3	6	5
73	Diabetes	M	137	134	3	.....	.....	....	....	....	.....	1	1
74		F	137	136	1	.....	.....	1	....	1	2	....	4
75	Anemia, leukemia	M	45	44	1	.....	.....	....	1	....	1	2	3
76		F	50	48	2	3	.....	....	....	....	3	....	1
77	Alcoholism	M	54	53	1	.....	.....	....	....	....	.....	....	....
78		F	12	12	.....	.....	.....	....	....	....	.....	....	....
79	Chronic poisonings	M	10	10	.....	.....	.....	....	....	....	.....	....	....
80		F	5	5	.....	.....	.....	....	....	....	.....	....	....
81	Other general diseases	M	22	21	1	.....	.....	....	....	....	.....	....	1
82		F	38	37	1	.....	.....	1	....	....	1	....	....
83	II—DISEASES OF NERVOUS SYSTEM		1,930	1,856	74	343	79	40	16	11	489	37	33
84	Males		1,056	1,024	32	181	35	23	5	6	250	20	21
85	Females		874	832	42	162	44	17	11	5	239	17	12
86	Encephalitis	M	4	4	.....	1	.....	1	....	....	2	....	....
87		F	8	8	.....	2	3	....	....	....	5	....	....
88	Meningitis	M	170	166	4	54	27	18	4	5	108	11	4
89		F	137	135	2	47	29	12	7	3	98	12	7
90	Locomotor ataxia	M	54	53	1	.....	.....	....	....	....	.....	....	....
91		F	16	16	.....	....	.....	....	....	....	.....	....	....
92	Other diseases of spinal cord	M	45	44	1	.....	.....	....	....	1	1	3	2
93		F	35	35	.....	.....	2	....	....	....	2	....	....
94	Apoplexy	M	349	341	8	7	.....	...	....	....	7	....	1
95		F	379	351	28	8	.....	....	1	....	9	1	....
96	Softening of brain	M	11	11	.....	.....	.....	....	....	....	.....	....	....
97		F	6	5	1	.....	.....	....	....	....	.....	....	....
98	Paralysis	M	43	43	.....	.....	1	....	1	....	2	....	....
99		F	48	46	2	1	1	....	1	....	3	....	....
100	General paralysis of insane	M	104	96	8	.....	.....	....	....	....	.....	....	....
101		F	37	33	4	.....	.....	....	....	....	.....	....	....
102	Other forms of mental disease	M	19	19	.....	.....	.....	....	....	....	.....	....	....
103		F	18	17	1	.....	.....	....	....	....	.....	....	....
104	Other diseases of brain	M	40	38	2	.....	.....	2	....	....	2	1	3
105		F	25	24	1	1	1	....	....	....	2	....	2
106	Epilepsy	M	31	29	2	1	.....	....	....	....	1	....	4
107		F	28	27	1	5	1	1	1	1	9	....	1
108	Convulsions	M	106	102	4	100	4	2	....	....	106	....	....
109		F	100	98	2	88	7	2	....	1	98	2	....
110	Tetanus	M	42	41	1	10	1	....	....	....	11	2	5
111		F	9	9	.....	5	....	....	....	....	5	1	....
112	Other diseases of nervous system	M	38	37	1	8	2	....	....	....	10	3	1
113		F	28	28	.....	5	.....	2	1	....	8	1	2
114	III—DISEASES OF CIRCULATORY SYSTEM		3,243	3,114	129	37	5	9	6	6	63	56	58
115	Males		1,726	1,654	72	17	4	4	1	2	28	28	35
116	Females		1,517	1,460	57	20	1	5	5	4	35	28	33

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
61	1	3	4	2	6	8	4	11	14	13	10	7	4	3	....	....	....	....	61
62	2	2	3	2	6	8	15	12	13	10	12	9	3	2	1	1	....	....	62
63	....	3	10	14	20	36	46	34	31	21	13	10	6	1	1	....	....	....	63
64	....	.....	.....	4	16	17	26	18	12	11	7	9	5	4	....	....	1	....	64
65	....	.....	.....	.....	.....	.....	2	1	4	2	.....	2	.....	.....	....	....	....	....	65
66	....	.....	.....	.....	1	.....	1	1	.....	1	1	.....	1	2	3	1	....	....	66
67	3	2	3	7	6	12	23	19	19	22	23	11	12	1	1	....	....	....	67
68	3	1	1	5	8	8	7	10	13	10	5	11	4	4	....	....	....	....	68
69	....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	....	....	....	....	69
70	....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	....	....	....	....	70
71	11	7	2	8	4	7	5	3	8	3	3	4	1	3	1	....	....	....	71
72	6	5	.....	6	6	6	5	2	5	3	4	5	.....	4	2	1	....	....	72
73	6	10	4	7	5	9	9	15	16	20	16	11	3	1	2	....	1	....	73
74	5	6	6	4	2	8	8	14	15	16	15	16	9	2	3	2	....	....	74
75	1	2	2	4	1	4	7	8	.....	5	3	1	.....	.....	....	....	1	....	75
76	.....	.....	2	4	4	6	6	7	3	5	3	4	1	1	....	....	....	....	76
77	....	1	3	5	10	11	9	5	4	4	.....	1	1	....	....	....	....	....	77
78	....	.....	1	3	2	3	2	.....	.....	1	.....	.....	.....	.....	....	....	....	....	78
79	....	2	1	1	.....	3	1	.....	1	1	.....	.....	.....	.....	....	....	....	....	79
80	....	.....	.....	1	2	1	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	....	80
81	1	1	2	1	3	3	2	3	3	2	.....	.....	.....	.....	....	....	....	....	81
82	4	4	5	4	5	3	5	1	2	2	1	.....	.....	.....	1	....	....	....	82
83	26	33	39	56	72	109	119	127	153	145	128	135	115	74	33	7	2	....	83
84	21	14	25	39	49	69	72	67	83	85	67	61	56	37	15	3	2	....	84
85	5	18	14	17	23	40	47	60	70	60	61	74	59	37	17	4	....	....	85
86	....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	....	....	....	....	86
87	....	1	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	....	....	....	....	87
88	9	7	6	5	2	1	6	5	3	.....	2	.....	1	.....	....	....	....	....	88
89	1	4	2	.....	4	1	1	2	1	2	1	1	.....	.....	....	....	....	....	89
90	....	.....	.....	3	4	5	5	13	6	7	6	3	1	1	....	....	....	....	90
91	....	.....	.....	.....	3	3	3	.....	3	3	.....	1	.....	.....	....	....	....	....	91
92	1	1	1	1	2	2	2	3	12	5	2	2	3	1	1	....	....	....	92
93	....	2	2	.....	2	1	3	1	5	4	6	5	1	1	....	....	....	....	93
94	1	1	4	5	11	18	24	25	41	51	42	46	34	22	12	2	2	....	94
95	....	2	1	6	4	20	26	44	48	41	38	53	46	28	11	1	....	....	95
96	....	.....	1	.....	1	.....	1	1	.....	.....	3	1	2	1	....	....	....	....	96
97	....	.....	.....	.....	.....	1	.....	.....	1	.....	2	.....	1	.....	1	....	....	....	97
98	....	.....	.....	1	.....	2	3	2	5	8	4	2	8	6	....	....	....	....	98
99	....	.....	.....	1	.....	.....	1	2	3	2	9	9	6	6	4	2	....	....	99
100	....	.....	2	12	17	23	20	7	5	7	4	4	2	1	1	....	....	....	100
101	....	.....	1	4	4	6	4	6	4	2	2	1	2	1	....	....	....	....	101
102	....	.....	1	2	1	1	1	1	1	1	1	1	4	3	1	....	....	....	102
103	....	.....	1	2	2	2	1	.....	2	2	2	2	1	1	....	....	....	....	103
104	1	.....	4	4	4	6	3	5	4	1	1	1	.....	.....	....	....	....	....	104
105	1	5	1	.....	.....	5	5	2	.....	1	.....	1	.....	.....	....	....	....	....	105
106	2	2	4	5	1	3	2	1	1	4	.....	.....	.....	1	....	....	....	....	106
107	1	1	2	3	3	.....	2	2	1	.....	1	1	1	.....	....	....	....	....	107
108	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	108
109	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	109
110	3	1	1	1	3	7	.....	4	1	1	1	.....	.....	.....	....	....	....	....	110
111	....	1	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	111
112	4	2	1	.....	3	2	4	.....	3	.....	1	1	1	1	....	1	....	....	112
113	2	2	3	1	.....	1	.....	1	1	3	.....	.....	1	....	1	1	....	....	113
114	75	67	86	107	164	210	225	305	304	350	309	303	269	168	98	21	5	..	114
115	36	30	46	60	96	118	122	187	177	194	166	160	131	81	33	5	3	....	115
116	39	37	40	47	68	92	103	118	127	156	143	143	138	87	65	16	2	....	116

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE							
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	III—DISEASES OF CIRCULATORY SYSTEM —Continued												
117	Pericarditis	M	11	11	.....	.....	.....	....	....	....	.....	2	....
118		F	9	9	.....	.....	.....	....	....	....	.....	....	1
119	Endocarditis	M	210	206	4	2	1	3	....	1	7	3	3
120		F	217	206	11	2	1	2	1	1	7	7	7
121	Heart disease	M	1,148	1,084	64	4	1	1	....	1	7	12	12
122		F	1,013	969	44	5	.....	1	4	3	13	20	15
123	Angina pectoris	M	47	47	.....	.....	....	....	....	....	.....	1	....
124		F	31	31	.....	.....	.....	....	....	....	.....	1	....
125	Diseases of arteries	M	267	264	3	.....	.....	....	....	....	.....	....	....
126		F	192	190	2	.....	.....	....	....	....	.....	....	....
127	Embolism and thrombosis	M	20	20	.....	.....	.....	....	1	....	1	....	....
128		F	23	23	.....	.....	.....	....	....	....	.....	....	....
129	Diseases of veins	M	6	5	1	.....	.....	....	....	....	.....	....	....
130		F	13	13	.....	.....	.....	....	....	....	.....	....	....
131	Diseases of lymphatics	M	3	3	.....	2	.....	....	....	....	2	....	....
132		F	1	1	.....	1	.....	....	....	....	1	....	....
133	Other diseases of circulatory system	M	14	14	.....	9	2	....	....	....	11	....	....
134		F	18	18	.....	12	.....	2	....	....	14	....	....
135	IV—DISEASES OF RESPIRATORY SYSTEM		4,514	4,381	133	1,299	450	184	85	52	2,070	90	31
136	Males		2,531	2,449	82	720	252	94	39	30	1,135	43	14
137	Females		1,983	1,932	51	579	198	90	46	22	935	47	17
138	Laryngitis	M	5	5	.....	.....	1	2	....	....	3	....	....
139		F	1	1	.....	.....	.....	....	1	....	1	1	....
140	Other diseases of larynx	M	11	11	.....	3	2	3	....	1	9	1	....
141		F	8	8	.....	1	2	1	1	1	6	1	....
142	Diseases of thyroid body	M	.....	.....	.....	.....	.....	....	....	....	.....	....	....
143		F	11	11	.....	.....	.....	....	....	....	.....	....	1
144	Acute bronchitis	M	333	330	3	236	51	10	1	6	304	4	1
145		F	273	271	2	183	36	10	5	4	238	4	....
146	Chronic bronchitis	M	72	72	.....	5	1	1	....	....	7	....	....
147		F	111	111	.....	1	2	....	....	....	3	2	1
148	Bronchopneumonia	M	426	412	14	195	72	29	16	6	318	9	5
149		F	404	392	12	179	67	27	8	6	287	12	2
150	Pneumonia (lobar and unqualified)	M	1,591	1,529	62	275	124	47	21	16	483	28	10
151		F	1,090	1,055	35	202	88	50	31	10	381	36	12
152	Pleurisy	M	54	52	2	1	1	2	1	1	6	....	1
153		F	21	21	.....	.....	.....	1	....	1	2	2	1
154	Congestion of lungs	M	12	12	.....	4	.....	....	....	....	4	....	....
155		F	26	25	1	11	3	1	....	....	15	....	....
156	Gangrene of lungs	M	5	5	.....	.....	.....	....	....	....	.....	....	....
157		F	2	2	.....	.....	.....	....	....	....	.....	....	....
158	Asthma and emphysema	M	16	16	.....	.....	.....	....	....	....	.....	....	....
159		F	32	31	1	.....	.....	....	....	....	.....	....	....
160	Hemorrhage of lungs	M	4	3	1	1	.....	....	....	....	1	....	....
161		F	2	2	.....	1	.....	....	....	....	1	....	....
162	Other diseases of respiratory system	M	2	2	.....	.....	.....	....	....	....	.....	....	....
163		F	2	2	.....	1	.....	....	....	....	1	....	....
164	V—DISEASES OF DIGESTIVE SYSTEM		5,104	5,028	76	2,821	486	95	54	19	3,475	80	59
165	Males		2,795	2,758	37	1,562	251	47	28	9	1,897	38	28
166	Females		2,309	2,270	39	1,259	235	48	26	10	1,578	42	31
167	Diseases of mouth	M	6	6	.....	4	.....	....	....	....	4	....	....
168		F	3	3	.....	2	.....	....	....	....	2	....	....
169	Tonsillitis	M	3	3	.....	1	.....	....	1	....	2	....	....
170		F	7	6	1	.....	.....	....	....	3	3	2	....
171	Other diseases of pharynx	M	11	11	.....	.....	.....	1	....	....	1	1	....
172		F	8	8	.....	1	1	....	....	....	2	....	....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	AGE																	Unknown	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over		
117	1	1	.....	.....	.....	.....	.....	1	2	.....	1	1	1	.....	1	.....	.....	.....	117
118	.....	1	.....	1	1	.....	1	.....	1	.....	1	.....	.....	1	1	.....	.....	.....	118
119	3	4	7	6	16	23	12	16	24	16	18	21	10	12	6	.....	1	.....	119
120	2	7	6	9	14	9	17	10	13	27	17	17	21	13	12	2	.....	.....	120
121	29	23	35	50	69	81	92	134	119	138	105	97	69	35	18	2	1	.....	121
122	35	25	29	33	48	70	74	94	99	112	95	93	80	37	25	6	.....	.....	122
123	.....	.....	1	1	1	2	4	11	5	5	11	.....	4	1	.....	.....	.....	.....	123
124	1	.....	1	1	2	1	4	3	2	4	4	2	1	1	3	.....	.....	.....	124
125	.....	1	3	2	5	12	12	24	23	27	28	39	47	32	8	3	1	.....	125
126	.....	1	3	1	1	5	3	9	9	8	19	30	34	35	24	8	2	.....	126
127	.....	.....	.....	1	3	.....	1	1	1	6	3	2	.....	1	.....	.....	.....	.....	127
128	.....	1	1	1	2	4	.....	.....	3	2	6	1	2	.....	.....	.....	.....	.....	128
129	.....	.....	.....	.....	1	.....	1	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	129
130	.....	2	.....	1	.....	2	3	2	.....	2	1	.....	.....	.....	.....	.....	.....	.....	130
131	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	131
132	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	132
133	1	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	133
134	1	.....	.....	.....	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	134
135	68	75	97	158	164	160	213	186	188	210	188	205	173	132	79	20	7	.....	135
136	44	45	58	97	107	116	141	120	116	118	102	106	77	53	30	7	2	.....	136
137	24	30	39	61	57	44	72	66	72	92	86	99	96	79	49	13	5	.....	137
138	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	138
139	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	139
140	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	140
141	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	141
142	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142
143	1	1	1	2	.....	2	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	143
144	.....	.....	.....	1	1	1	1	2	2	3	1	4	2	3	3	.....	.....	.....	144
145	.....	.....	.....	.....	1	1	.....	3	2	3	4	6	4	4	2	1	.....	.....	145
146	1	.....	.....	.....	1	2	2	4	6	7	5	11	12	9	4	.....	1	.....	146
147	1	1	.....	2	.....	1	3	6	6	10	7	16	17	21	10	2	2	.....	147
148	7	4	5	5	3	6	9	5	6	5	11	6	8	11	4	2	.....	.....	148
149	1	4	4	.....	3	4	2	4	4	11	19	16	11	9	8	2	1	.....	149
150	30	38	51	87	97	100	121	106	89	97	75	81	54	25	14	5	.....	.....	150
151	21	23	34	51	50	33	64	52	57	58	51	50	58	39	22	6	2	.....	151
152	5	2	2	3	3	3	6	3	6	3	6	1	.....	1	3	.....	.....	.....	152
153	.....	1	.....	3	2	.....	1	.....	2	2	2	1	1	1	.....	.....	.....	.....	153
154	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	1	1	2	.....	1	.....	154
155	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	4	.....	1	3	1	.....	.....	155
156	.....	.....	.....	.....	.....	.....	.....	.....	2	1	1	.....	.....	1	.....	.....	.....	.....	156
157	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	157
158	.....	.....	.....	1	.....	1	1	.....	5	2	3	1	.....	2	.....	.....	.....	.....	158
159	.....	.....	.....	.....	1	1	.....	1	1	7	2	5	5	4	4	1	.....	.....	159
160	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	160
161	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	161
162	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	162
163	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	163
164	60	77	88	92	135	124	175	141	135	115	104	93	67	43	26	9	4	.....	164
165	33	41	43	51	77	68	112	80	83	66	58	55	32	18	9	4	2	.....	165
166	27	36	45	41	58	56	63	61	52	49	46	40	35	25	17	5	2	.....	166
167	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	167
168	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	168
169	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	169
170	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	170
171	.....	1	.....	1	.....	.....	1	1	.....	.....	2	2	.....	.....	1	.....	.....	.....	171
172	1	.....	.....	.....	2	.....	...	....	.....	.....	.....	.....	1	....	1	1	.....	.....	172

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE						
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9
	V—DISEASES OF DIGESTIVE SYSTEM —Continued											
173	Ulcer of stomach	M	42	42	.....	.....	.....	.....	.....	.....	.....	.....
174		F	40	38	2	.....	.....	.....	.....	.....	.....	.....
175	Gastritis	M	116	113	3	66	4	3	5	.....	77	2
176		F	107	105	2	50	3	3	1	1	67	1
177	Other diseases of stomach	M	11	11	.....	8	.....	.....	.....	.....	8	.....
178		F	14	14	.....	6	.....	1	.....	.....	7	.....
179	Dentition	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
180		F	2	2	.....	2	.....	.....	.....	.....	2	.....
181	Diarrhea and enteritis	M	1,846	1,828	18	1,442	242	40	18	7	1,749	16
182		F	1,556	1,533	23	1,164	238	42	20	3	1,457	18
183	Hernia	M	62	59	3	5	.....	.....	.....	.....	5	.....
184		F	52	52	.....	.....	.....	.....	.....	.....	.....	1
185	Obstruction of intestines	M	77	75	2	25	3	1	1	.....	30	3
186		F	78	70	3	13	2	.....	2	.....	18	2
187	Other diseases of intestines	M	20	19	1	6	.....	.....	.....	.....	6	1
188		F	29	28	1	10	1	2	.....	.....	13	.....
189	Acute yellow atrophy of liver	M	5	5	.....	.....	.....	.....	.....	.....	.....	.....
190		F	1	1	.....	.....	.....	.....	.....	.....	.....	.....
191	Hydatid tumors of liver	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
192		F	1	1	.....	.....	.....	.....	.....	.....	.....	.....
193	Cirrhosis of liver	M	294	291	3	.....	.....	.....	.....	.....	.....	.....
194		F	132	131	1	.....	.....	.....	.....	.....	.....	.....
195	Biliary calculi	M	27	27	.....	.....	.....	.....	.....	.....	.....	.....
196		F	57	57	.....	.....	.....	.....	.....	.....	.....	.....
197	Other diseases of liver	M	51	49	2	4	1	.....	.....	.....	5	2
198		F	32	32	.....	2	.....	.....	.....	.....	2	.....
199	Diseases of spleen	M	1	1	.....	.....	.....	.....	.....	.....	.....	.....
200		F	2	1	1	.....	.....	.....	.....	.....	.....	.....
201	Peritonitis	M	9	9	.....	1	.....	1	.....	.....	2	1
202		F	11	10	1	.....	.....	.....	.....	.....	.....	.....
203	Appendicitis	M	207	202	5	1	1	1	3	2	8	12
204		F	178	174	4	.....	.....	.....	2	3	5	18
205	Other diseases of digestive system	M	7	7	.....	.....	.....	.....	.....	.....	.....	.....
206		F	4	4	.....	.....	.....	.....	.....	.....	.....	.....
207	VI — DISEASES OF GENITO-URINARY SYSTEM		2,501	2,405	96	44	15	8	8	5	80	20
208	Males		1,381	1,334	47	21	10	8	6	3	48	12
209	Females		1,120	1,071	49	23	5	.....	2	2	32	8
210	Acute nephritis	M	130	124	6	9	3	5	1	2	20	7
211		F	104	99	5	8	3	.....	2	1	14	2
212	Bright's disease	M	1,118	1,077	41	8	5	3	5	.....	21	3
213		F	786	758	28	7	2	.....	.....	1	10	6
214	Other diseases of kidneys	M	27	27	.....	4	1	.....	.....	1	6	2
215		F	20	20	.....	7	.....	.....	.....	.....	7	.....
216	Calculi of urinary tract	M	7	7	.....	.....	.....	.....	.....	.....	.....	.....
217		F	4	4	.....	.....	.....	.....	.....	.....	.....	.....
218	Diseases of bladder	M	21	21	.....	.....	1	.....	.....	.....	1	.....
219		F	6	6	.....	1	.....	.....	.....	.....	1	.....
220	Uterine tumor	F	44	38	6	.....	.....	.....	.....	.....	.....	.....
221	Other diseases of uterus	F	27	25	2	.....	.....	.....	.....	.....	.....	.....
222	Ovarian tumor	F	32	30	2	.....	.....	.....	.....	.....	.....	.....
223	Diseases of tubes	F	93	87	6	.....	.....	.....	.....	.....	.....	.....
224	Other diseases of genito-urinary system	M	78	78	.....	.....	.....	.....	.....	.....	.....	.....
225		F	4	4	.....	.....	.....	.....	.....	.....	.....	.....
226	VII—CHILDBIRTH		333	327	6	.....	.....	.....	.....	.....	.....	.....
227	Puerperal septicemia	F	179	176	3	.....	.....	.....	.....	.....	.....	.....
228	Puerperal convulsions	F	55	52	3	.....	.....	.....	.....	.....	.....	.....
229	Other causes incident to childbirth	F	99	99	.....	.....	.....	.....	.....	.....	.....	.....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
173	....	2	1	3	6	5	6	5	3	4	4	1	1	1	....	....	....	....	173
174	1	5	2	3	5	6	2	4	1	1	2	2	4	1	....	....	....	....	174
175	....	....	1	2	....	1	2	4	2	3	3	8	5	3	3	....	....	....	175
176	2	1	....	1	....	5	1	2	4	4	2	3	....	3	5	....	....	....	176
177	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	1	....	....	177
178	....	....	....	....	....	....	....	....	....	....	2	....	1	1	1	1	1	....	178
179	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	179
180	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	180
181	1	6	3	2	3	4	11	2	10	3	10	7	5	6	3	1	1	....	181
182	2	3	3	....	6	....	3	3	5	9	10	10	12	5	7	2	....	....	182
183	....	4	2	2	1	4	6	6	7	6	7	5	3	3	....	1	....	....	183
184	....	....	....	3	2	4	7	4	8	8	9	2	1	2	1	....	....	....	184
185	6	2	....	4	2	2	4	2	4	8	2	4	2	....	....	....	....	....	185
186	1	2	2	3	7	4	8	3	3	2	2	7	4	1	....	1	1	....	186
187	....	....	....	1	2	1	1	2	2	3	....	....	....	....	....	....	1	....	187
188	....	....	2	2	1	1	....	2	....	....	2	3	2	1	....	....	....	....	188
189	1	1	1	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	189
190	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	190
191	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	191
192	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	192
193	1	1	5	8	32	33	48	35	44	30	20	18	12	4	2	1	....	....	193
194	1	2	7	5	15	13	21	13	13	16	5	11	6	3	....	....	....	....	194
195	....	1	....	2	1	1	6	2	3	2	6	3	....	....	....	....	....	....	195
196	....	....	1	2	5	4	8	14	9	4	7	1	1	....	1	....	....	....	196
197	....	4	7	5	5	....	6	4	4	2	3	3	1	....	....	....	....	....	197
198	....	1	2	3	1	....	1	6	5	3	1	1	3	2	1	....	....	....	198
199	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	199
200	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	200
201	....	....	....	1	....	1	1	1	1	....	....	....	....	....	....	....	....	....	201
202	....	....	3	....	1	3	1	1	....	....	1	....	....	....	....	....	....	....	202
203	24	18	23	20	21	15	18	14	2	3	1	4	2	....	....	....	....	....	203
204	18	22	22	18	12	15	9	7	4	1	2	....	....	1	....	....	....	....	204
205	....	1	....	....	2	....	1	....	1	2	....	....	....	....	....	....	....	....	205
206	....	....	1	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	206
207	29	75	102	117	205	173	228	224	235	244	226	199	159	114	43	11	3	....	207
208	12	28	45	49	111	106	130	136	135	153	116	119	85	53	31	4	1	....	208
209	17	47	57	68	94	65	98	88	100	91	110	80	74	61	12	7	2	....	209
210	4	13	6	6	14	11	11	10	5	4	5	2	5	2	4	....	....	....	210
211	4	10	6	6	7	8	4	6	5	6	7	7	3	5	1	....	....	....	211
212	8	14	38	43	93	92	115	118	114	128	98	96	65	40	23	4	1	....	212
213	10	12	26	26	48	33	63	69	86	80	97	72	64	55	11	7	2	....	213
214	....	....	1	....	2	2	1	1	5	3	2	1	....	1	....	....	....	....	214
215	....	2	....	2	1	1	2	1	1	1	2	....	....	....	....	....	....	....	215
216	....	1	....	....	....	....	1	1	1	2	....	1	....	....	....	....	....	....	216
217	....	....	....	....	1	....	2	....	....	1	....	....	....	....	....	....	....	....	217
218	....	....	....	....	1	....	....	1	1	3	3	4	2	4	1	....	....	....	218
219	....	....	....	....	....	....	....	....	1	....	1	....	3	....	....	....	....	....	219
220	....	....	2	5	5	11	8	5	3	2	1	1	1	....	....	....	....	....	220
221	....	2	1	6	5	2	4	5	2	....	....	....	....	....	....	....	....	....	221
222	1	4	1	2	6	6	4	....	1	1	2	....	3	1	....	....	....	....	222
223	2	17	19	20	21	3	8	2	1	....	....	....	....	....	....	....	....	....	223
224	....	....	....	....	1	3	2	5	9	13	8	15	13	6	3	....	....	....	224
225	....	....	2	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	225
226	16	77	84	74	53	24	4	....	....	....	....	....	....	....	....	....	....	1	226
227	12	43	47	36	29	10	2	....	....	....	....	....	....	....	....	....	....	....	227
228	3	17	12	13	7	2	1	....	....	....	....	....	....	....	....	....	....	....	228
229	1	17	25	25	17	12	1	....	....	....	....	....	....	....	....	....	....	1	229

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1906.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE						
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9
230	VIII—DISEASES OF SKIN		73	73	.....	27	.....	....	1	....	28	....
231	Males		47	47	.....	17	.....	....	....	....	17	....
232	Females		26	26	.....	10	.....	....	1	....	11	....
233	Gangrene	M	15	15	.....	.....	.....	....	....	....	.....	....
234		F	6	6	.....	.....	.....	....	....	....	.....	....
235	Carbuncle	M	3	3	.....	.....	.....	....	....	....	.....	....
236		F	.....	.....	.....	.....	.....	....	....	....	.....	....
237	Abscess	M	5	5	.....	.....	.....	....	....	....	.....	....
238		F	8	8	.....	3	.....	....	1	....	4	....
239	Other diseases of skin	M	24	24	.....	17	.....	....	....	....	17	....
240		F	12	12	.....	7	.....	....	....	....	7	....
241	IX—DISEASES OF LOCOMOTOR SYSTEM		66	64	2	20	9	4	....	1	34	6
242	Males		39	37	2	14	7	3	....	1	25	3
243	Females		27	27	.....	6	2	1	....	....	9	3
244	Diseases of bones	M	38	36	2	14	7	3	....	1	25	3
245		F	24	24	.....	6	1	1	....	....	8	3
246	Diseases of joints	M	1	1	.....	.....	.....	....	....	....	.....	1
247		F	3	3	.....	.....	1	....	....	....	1	....
248	Other diseases of locomotor system	M	.....	.....	.....	.....	.....	....	....	....	.....	....
249		F	.....	.....	.....	.....	.....	....	....	....	.....	....
250	X—MALFORMATION		277	271	6	263	6	....	....	1	270	4
251	Males		157	152	5	147	3	....	....	1	151	3
252	Females		120	119	1	116	3	....	....	....	119	1
253	Hydrocephalus	M	16	14	2	11	1	....	....	1	13	3
254		F	14	14	.....	12	1	....	....	....	13	1
255	Congenital malformation of heart (cyanosis)	M	96	93	3	95	.....	....	....	....	95	....
256		F	57	57	.....	57	.....	....	....	....	57	....
257	Other congenital malformations	M	45	45	.....	41	2	....	....	....	43	....
258		F	49	48	1	47	2	....	....	....	49	....
259	XI—DISEASES OF EARLY INFANCY		1,117	1,095	22	1,117	.....	....	....	....	1,117	....
260	Males		618	610	8	618	.....	....	....	....	618	....
261	Females		499	485	14	499	.....	....	....	....	499	....
262	Premature birth	M	344	341	3	344	.....	....	....	....	344	....
263		F	289	284	5	289	.....	....	....	....	289	....
264	Congenital debility	M	274	269	5	274	.....	....	....	....	274	....
265		F	210	201	9	210	.....	....	....	....	210	....
266	XII—OLD AGE		109	107	2	.....	.....	....	....	....	.....	....
267	Males		34	33	1	.....	.....	....	....	....	.....	....
268	Females		75	74	1	.....	.....	....	....	....	.....	....
269	XIII—VIOLENCE		2476	2411	65	334	30	34	29	23	461	89
270	Males		1907	1863	44	207	21	23	16	12	279	58
271	Females		569	548	21	127	18	11	13	11	182	31
272	Suicide	M	382	376	6	.....	.....	....	....	....	.....	....
273		F	112	109	3	.....	.....	....	....	....	.....	....
274	Fracture and dislocation	M	3	3	.....	.....	.....	....	....	....	.....	....
275		F	5	5	.....	.....	.....	....	....	....	.....	....
276	Burns and scalds	M	75	74	1	5	12	11	9	3	40	7
277		F	79	74	5	2	7	4	6	5	24	15

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	AGE																		
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
2	28	34	1	.....	1	.....	3	2	4	8	3	6	5	6	....	1	....	....	230
3	1	28	1	.....	1	.....	2	2	4	2	2	5	3	4	....	1	....	....	231
4	1	1	.....	.....	.....	.....	1	.....	.....	6	1	1	2	2	....	....	....	....	232
5	1	.....	.....	.....	.....	.....	.....	.....	2	1	1	3	2	4	....	1	....	....	233
6	....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	2	1	....	....	....	....	234
7	....	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	...	....	....	....	....	235
8	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	236
9	....	.....	1	.....	.....	.....	.....	1	1	1	1	.....	.....	....	....	....	....	....	237
10	1	1	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	....	....	....	....	....	238
11	....	1	.....	.....	1	.....	1	.....	1	.....	.....	2	1	....	....	....	....	....	239
12	....	.....	.....	.....	.....	.....	1	.....	.....	3	.....	.....	.....	1	....	....	....	....	240
13	4	1	1	1	.....	4	2	1	4	.....	1	2	.....	....	....	....	....	....	241
14	22	1	1	.....	.....	3	1	.....	.....	.....	.....	1	.....	....	....	....	....	....	242
15	22	.....	.....	1	.....	1	1	1	4	.....	1	1	.....	....	....	....	....	....	243
16	22	1	1	.....	.....	3	1	.....	.....	.....	.....	1	.....	....	....	....	....	....	244
17	22	.....	.....	1	.....	1	1	.....	4	.....	1	.....	.....	....	....	....	....	....	245
18	....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	....	....	....	....	....	246
19	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	247
20	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	248
21	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	249
22	....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	250
23	....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	251
24	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	252
25	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	253
26	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	254
27	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	255
28	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	256
29	....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	257
30	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	258
31	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	259
32	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	260
33	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	261
34	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	262
35	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	263
36	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	264
37	....	.....	.....	.....	.....	.....	.....	.....	.....	4	2	13	17	27	23	14	9	....	265
38	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	3	6	13	7	3	1	....	266
39	....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	10	11	14	16	11	8	....	267
40	98	187	191	184	217	202	206	151	123	92	76	48	37	20	11	1	2	4	268
41	78	144	148	151	177	175	187	132	104	78	63	34	19	13	2	1	....	4	269
42	20	43	43	33	40	27	19	19	19	14	13	14	18	7	9	....	2	....	270
43	10	29	32	34	47	46	51	27	35	26	27	11	4	1	1	....	....	1	271
44	7	16	22	11	18	9	5	9	5	5	.....	1	1	1	1	....	....	....	272
45	....	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	273
46	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	1	....	....	....	274
47	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	1	....	....	....	275
48	2	4	3	3	4	3	1	3	1	1	....	.....	.....	....	1	....	....	....	276
49	1	5	6	6	4	6	2	1	2	1	1	2	1	....	1	....	....	....	277

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	CAUSE OF DEATH		Totals	COLOR		AGE						
				White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9
	XIII—VIOLENCE—Continued											
278	Heat and sunstroke	M	25	24	1	5	....	....	....	....	5	....
279		F	14	12	2	2	....	....	....	....	2	1
280	Cold and freezing	M	2	1	1	....	....	....	....	....	....	....
281		F	....	....	....	....	....	....	....	....	....	....
282	Lightning	M	....	....	....	....	....	....	....	....	....	....
283		F	....	....	....	....	....	....	....	....	....	....
284	Drowning	M	117	114	3	3	1	....	1	....	5	10
285		F	5	5	....	....	....	....	....	....	....	....
286	*Inhalation of poisonous gases	M	129	126	3	....	2	....	1	2	5	....
287		F	42	41	1	2	1	....	....	....	3	3
288	Other accidental poisonings	M	27	27	....	....	4	....	....	1	5	1
289		F	22	22	....	1	1	2	1	1	6	....
290	Accidental gunshot wounds	M	17	16	1	....	....	1	....	....	1	2
291		F	1	1	....	....	....	....	1	....	1	....
292	Injuries by machinery	M	55	55	....	....	....	....	....	....	....	1
293		F	3	3	....	....	....	....	....	....	....	....
294	Injuries in mines and quarries	M	2	2	....	....	....	....	....	....	....	....
295		F	....	....	....	....	....	....	....	....	....	....
296	Railroad accidents and injuries	M	209	205	4	....	....	....	....	....	....	7
297		F	19	18	1	....	....	....	....	....	....	....
298	Street car accidents	M	147	146	1	....	....	1	2	2	5	15
299		F	24	24	....	....	....	....	1	2	3	3
300	Injuries by vehicles and horses	M	63	63	....	....	....	3	1	3	7	4
301		F	15	13	2	....	3	....	2	3	8	3
302	Automobile accidents	M	21	21	....	....	....	....	....	....	....	3
303		F	4	4	....	....	....	....	....	....	....	1
304	Suffocation	M	24	24	....	14	....	....	....	....	14	....
305		F	10	10	....	8	....	....	....	....	8	....
306	Other accidental injuries	M	318	312	6	3	2	7	2	1	15	5
307		F	64	64	....	2	6	4	1	1	14	3
308	Injuries at birth	M	146	145	1	146	....	....	....	....	146	....
309		F	88	86	2	88	....	....	....	....	88	....
310	Homicide	M	145	129	16	31	....	....	....	....	31	1
311		F	62	57	5	22	....	1	1	1	25	2
312	XIV—ILL-DEFINED CAUSES		110	110	....	96	6	....	....	....	102	....
313	Males		60	60	....	55	2	....	....	....	57	....
314	Females		50	50	....	41	4	....	....	....	45	....
315	"Dropsy"	M	....	....	....	....	....	....	....	....	....	....
316		F	3	3	....	....	....	....	....	....	....	....
317	"Heart failure"	M	2	2	....	....	....	....	....	....	....	....
318		F	1	1	....	....	....	....	....	....	....	....
319	Other ill-defined causes	M	58	58	....	55	2	....	....	....	57	....
320		F	46	46	....	41	4	....	....	....	45	....
321	Unknown causes	M	....	....	....	....	....	....	....	....	....	....
322		F	....	....	....	....	....	....	....	....	....	....

*Includes "Conflagration."

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, ILL.—*Continued.*

Calendar Year, 1908.

Line No.	AGE																	Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 & Over	Unknown	
	....	1	1	3	1	2	2	2	4	1	2	1	.....	....	....	....	....	....	278
	....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	2	3	2	1	....	....	....	279
	....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	....	....	....	....	....	280
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	281
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	282
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	283
	8	8	13	7	10	10	10	6	10	3	1	1	1	....	....	....	....	2	284
	1	.....	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	....	....	285
	6	15	8	10	10	12	10	18	9	9	6	4	3	4	....	....	....	....	286
	3	6	3	2	1	1	.....	3	4	2	1	3	3	1	....	....	....	....	287
	....	2	1	4	2	5	5	1	.....	1	.....	.....	.....	....	....	....	....	....	288
	....	1	1	2	3	3	2	1	1	1	.....	.....	.....	....	....	....	....	....	289
	2	1	.....	3	2	1	1	.....	1	1	.....	1	.....	....	....	....	....	....	290
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	291
	6	9	9	11	4	3	4	3	2	.....	.....	.....	.....	....	....	....	....	....	292
	....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	....	....	293
	....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	294
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	295
	11	19	24	20	24	25	27	20	9	6	5	4	.....	1	....	....	....	1	296
	1	4	1	2	2	3	3	1	1	.....	.....	.....	.....	....	....	....	....	....	297
	9	15	7	9	11	18	12	12	11	4	7	1	1	1	....	....	....	....	298
	2	1	.....	.....	2	2	3	1	.....	1	3	1	1	....	....	....	....	....	299
	2	7	2	2	3	7	3	8	4	5	4	2	1	....	....	....	....	..	300
	....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	....	....	....	....	....	301
	1	.....	.....	.....	2	1	2	2	1	2	1	2	.....	....	....	....	....	....	302
	....	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	....	....	....	....	....	303
	....	1	.....	1	1	.....	3	.....	1	1	.....	.....	.....	....	....	....	....	....	304
	....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	....	....	....	....	....	305
	11	17	26	26	39	31	44	23	15	18	10	6	9	5	....	1	....	....	306
	....	1	2	1	2	1	4	2	4	3	6	3	7	2	5	....	2	....	307
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	308
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	309
	10	16	22	17	16	10	9	6	1	.....	.....	1	.....	1	....	....	....	....	310
	5	7	7	4	7	1	.....	.....	.....	.....	1	.....	1	....	....	....	....	....	311
	....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1	4	1	....	....	....	312
	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	1	....	....	....	313
	....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	3	....	....	....	....	314
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	315
	....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	....	....	....	....	316
	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	....	....	....	....	317
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	....	....	....	....	318
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	1	....	....	....	319
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	....	....	....	....	....	320
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	321
	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....	322

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MORTALITY STATISTICS

1909

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	COLORS		AGE							
					White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
1	**All causes**		31,296	.....	30,281	1,015	6,384	1,586	669	416	305	9 360	774	44
2	**Males**		17,871	.....	17,261	610	3,600	832	350	220	158	5,160	409	23
3	**Females**		13,425	.....	13,020	405	2,784	754	319	196	147	4,200	365	21
4	**I—GENERAL DISEASES**		8,552	.....	8,218	334	477	385	294	205	165	1,526	379	16
5	**Males**		4,757	.....	4,568	189	253	194	150	111	84	792	196	
6	**Females**		3,795	.....	3,650	145	224	191	144	94	81	734	183	9
7	Typhoid fever	M	271	173	171	2	2	1	....	3	2	8	5	
8		F	.....	98	97	1	.....	2	3	1	....	6	1	
9	Malarial fever	M	9	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
10		F	.....	3	2	1	.....	.....	.....	.....	1	1	.....	.....
11	Smallpox	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Measles	M	165	88	84	4	23	27	17	11	2	8	6	
14		F	.....	77	77	.....	23	30	8	6	5	72	5	
15	Scarlet fever	M	369	183	180	3	13	23	40	31	17	124	45	
16		F	.....	186	185	1	12	20	27	27	25	111	45	1
17	Whooping cough	M	139	50	50	.....	27	12	6	3	2	50	.....	
18		F	.....	89	84	5	38	22	16	3	6	85	4	
19	Diphtheria	M	627	305	304	1	28	66	46	39	41	220	64	1
20		F	.....	322	318	4	21	62	57	39	27	206	79	1
21	Croup	M	53	35	35	.....	1	5	6	10	5	27	.....	
22		F	.....	18	18	.....	2	7	3	....	1	13	5	
23	Influenza	M	186	85	82	3	7	4	2	1	2	16	2	
24		F	.....	101	99	2	8	4	1	.....	.....	13	1	
25	Cholera nostras	M	7	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
26		F	.....	6	6	.....	2	1	.....	1	.....	4	.....	.....
27	Dysentery	M	80	48	46	2	8	4	1	.....	.....	13	.....	.....
28		F	.....	32	31	1	5	3	2	.....	.....	10	.....	.....
29	Erysipelas	M	130	76	75	1	20	1	.....	.....	.....	21	.....	.....
30		F	.....	54	53	1	22	3	.....	.....	.....	25	.....	.....
31	Other epidemic diseases	M	3	2	2	.....	.....	1	1	.....	.....	2	.....	.....
32		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....
33	Septicemia	M	44	34	33	1	3	2	.....	.....	.....	5	3	
34		F	.....	10	9	1	2	.....	.....	.....	.....	2	.....	.....
35	Tuberculosis of lungs	M	3,346	2,141	2,002	139	21	16	8	3	3	51	13	1
36		F	.....	1,205	1,126	79	17	7	3	3	6	36	10	1
37	Tuberculosis of larynx	M	26	20	19	1	.....	.....	1	.....	.....	1	.....	.....
38		F	.....	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	Tuberculous meningitis	M	234	125	121	4	24	30	10	8	3	65	30	
40		F	.....	109	104	5	17	17	14	7	7	62	13	
41	Abdominal tuberculosis	M	121	57	53	4	2	4	2	.....	1	9	.....	
42		F	.....	64	58	6	2	3	2	1	1	9	1	
43	Pott's disease	M	46	32	31	1	.....	.....	1	.....	.....	1	5	
44		F	.....	14	14	.....	.....	.....	1	.....	1	2	.....	
45	Tuberculous abscess	M	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46		F	.....	2	1	1	.....	.....	1	.....	.....	1	.....	.....
47	White swelling	M	20	12	12	.....	1	.....	.....	.....	.....	1	1	
48		F	.....	8	8	.....	1	.....	.....	.....	.....	1	.....	
49	Tuberculosis of other organs	M	62	40	38	2	3	1	.....	1	.....	5	3	
50		F	.....	22	20	2	3	3	.....	.....	.....	6	2	
51	General tuberculosis	M	28	14	13	1	2	.....	1	.....	.....	3	2	1
52		F	.....	14	14	.....	1	1	.....	.....	.....	2	1	
53	Scrofula	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
54		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
55	Venereal disease	M	231	146	137	8	61	5	2	.....	.....	68	1	1
56		F	.....	76	82	4	45	.....	2	2	.....	49	.....	.....
57	...cer of mouth	M	52	47	47	.....	.....	.....	.....	.....	.....	.....	.....	.....
58		F	.....	5	5	.....	.....	.....	.....	.....	.....	.....	.....	.....
59	...stomach and liver	M	730	406	404	2	.....	.....	.....	.....	.....	.....	.....	1
60		F	.....	324	319	5	.....	.....	.....	.....	.....	.....	.....	.....

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
1	735	1,252	1,436	1,561	1,727	1,738	2,047	1,829	1,660	1,668	1,526	1,309	1,058	666	343	125	21	8	6	1
2	368	659	827	948	1,054	1,125	1,325	1,180	1,017	991	821	682	532	332	142	52	8	1	2	2
3	367	593	609	613	673	613	722	649	642	677	705	627	526	334	201	73	13	7	4	3
4	377	624	640	663	627	619	638	562	478	433	328	232	154	68	33	7	2	..	4	4
5	163	320	371	413	385	372	386	346	273	240	180	117	78	30	15	3	2	..	1	5
6	214	304	269	250	242	247	252	216	198	193	148	115	76	38	18	4	..	..	3	6
7	13	28	37	24	17	13	7	5	3	5	....	1	.....	1	....	....	....	..	..	7
8	16	15	13	9	5	2	4	9	.....	1	1	1	.....	....	....	....	....	..	..	8
9	....	.....	1	.....	.....	1	.....	.....	.....	3	.....	.....	.....	....	1	....	....	..	..	9
10	....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	....	....	....	....	..	..	10
11	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	11
12	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	12
13	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	13
14	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	14
15	1	1	1	1	.....	1	.....	1	.....	.....	.....	.....	.....	....	....	....	....	..	..	15
16	2	4	3	1	2	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	16
17	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	17
18	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	18
19	6	9	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	19
20	9	4	3	1	2	.....	1	1	1	.....	1	.....	.....	....	....	....	....	..	..	20
21	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	21
22	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	22
23	....	2	3	4	4	7	4	4	8	4	8	8	6	3	....	....	....	..	..	23
24	1	3	3	2	1	4	3	4	8	7	14	9	9	8	8	3	....	..	..	24
25	....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	....	....	....	....	..	..	25
26	....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	....	....	....	....	..	..	26
27	....	1	1	.....	.....	1	4	3	1	3	4	6	6	5	....	....	....	..	..	27
28	1	1	2	.....	.....	1	2	1	3	3	2	2	1	1	2	....	....	..	..	28
29	....	2	5	5	6	6	5	2	2	8	8	3	1	1	1	....	....	..	..	29
30	....	2	3	1	.....	1	4	4	3	3	2	4	1	....	1	....	....	..	..	30
31	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	31
32	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	32
33	....	1	.....	.....	2	6	7	3	1	3	1	.....	.....	....	....	....	....	..	..	33
34	....	.....	2	1	.....	1	1	1	.....	.....	1	.....	1	....	....	....	....	..	..	34
35	106	232	271	315	272	238	227	157	110	70	40	16	6	3	1	1	....	..	..	35
36	153	210	190	157	119	107	67	47	25	20	19	11	7	1	1	....	....	..	3	36
37	....	3	1	2	2	3	3	3	.....	2	.....	.....	.....	1	....	....	....	..	..	37
38	....	.....	2	1	1	.....	1	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	38
39	8	9	5	3	.....	4	2	2	2	.....	.....	.....	.....	....	....	....	....	..	..	39
40	7	7	3	2	4	1	2	.....	1	1	.....	1	.....	....	....	....	....	..	..	40
41	4	7	4	4	5	7	4	2	3	1	4	.....	.....	....	....	....	....	..	1	41
42	7	7	6	10	5	4	4	3	1	2	.....	3	.....	....	....	....	....	..	..	42
43	1	4	4	1	2	2	2	3	1	.....	1	.....	1	....	....	....	....	..	..	43
44	1	2	1	.....	.....	2	3	.....	.....	.....	1	.....	.....	....	....	....	....	..	..	44
45	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	45
46	....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	46
47	1	1	.....	2	.....	2	1	.....	2	1	.....	.....	.....	....	....	....	....	..	..	47
48	....	1	3	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	48
49	1	1	6	4	6	1	2	1	1	4	2	2	.....	1	....	....	....	..	..	49
50	1	.....	3	.....	2	.....	1	2	2	.....	1	.....	2	....	....	....	....	..	..	50
51	....	2	3	1	.....	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	....	..	..	51
52	2	3	1	2	.....	.....	2	.....	.....	.....	.....	1	.....	....	....	....	....	..	..	52
53	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	53
54	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	54
55	3	5	5	8	14	10	5	10	4	5	4	2	.....	....	....	....	....	..	..	55
56	1	5	5	4	6	2	7	3	2	2	.....	.....	.....	....	....	....	....	..	..	56
57	....	.....	1	.....	.....	4	5	10	7	6	2	5	3	....	....	....	....	..	..	57
58	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	1	1	....	....	....	..	..	58
59	....	1	6	5	13	25	48	71	70	54	56	30	18	5	2	....	....	1	..	59
60	....	3	2	12	17	27	33	40	51	45	35	27	22	9	1	....	....	..	..	60

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	COLORS		AGE							
					White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	I—GENERAL DISEASES —Continued													
61	Cancer of intestines	M	192	85	83	2	1	.....	....	....	....	1	....	....
62		F	.....	107	105	2	.....	.....	....	....	....	.....	....	....
63	female genital organs	F	260	260	247	13	.....	.....	....	....	....	.....	....	....
64	breast	F	111	111	108	3	.....	.....	....	....	....	.....	....	....
65	skin	M	30	17	17	.....	1	.....	....	....	....	1	....	....
66		F	.....	13	13	.....	.....	.....	....	....	....	.....	....	....
67	other or unspecified	M	271	171	166	5	2	.....	2	....	1	5	1	1
68	organs	F	.....	100	100	.....	.....	3	....	2	....	5	1	....
69	Tumor	M	1	.....	.....	.....	.....	.....	....	....	....	.....	....	....
70		F	.....	1	1	.....	.....	.....	....	1	....	1	....	....
71	Rheumatism	M	158	81	80	1	.....	.....	1	1	5	7	7	10
72		F	.....	77	73	4	1	1	1	....	1	4	7	7
73	Diabetes	M	299	145	144	1	.....	2	1	....	....	3	4	3
74		F	.....	154	151	3	.....	.....	....	....	....	.....	....	6
75	Anemia, leukemia	M	122	62	62	.....	3	.....	1	....	....	4	3	1
76		F	.....	60	60	.....	2	2	2	1	....	7	1	1
77	Alcoholism	M	53	48	47	1	....	.....	....	....	....	.....	....	....
78		F	.....	5	5	.....	.....	.....	....	....	....	.....	....	....
79	Chronic poisonings	M	9	4	4	.....	.....	.....	....	....	....	.....	....	....
80		F	.....	5	5	.....	.....	.....	....	....	....	.....	....	....
81	Other general diseases	M	65	19	19	.....	.....	.....	1	....	....	1	2	....
82		F	.....	46	45	1	.....	.....	1	....	....	1	....	....
83	II—DISEASES OF NERVOUS SYSTEM		1,761	.....	1,700	61	162	51	25	24	16	278	45	29
84	Males		940	.....	906	34	95	24	16	9	8	152	22	22
85	Females		821	.....	794	27	67	27	9	15	8	126	23	7
86	Encephalitis	M	3	2	2	.....	.....	.....	....	....	....	.....	....	....
87		F	.....	1	1	.....	1	.....	....	....	....	1	....	....
88	Meningitis	M	263	142	136	6	39	16	10	4	6	75	11	6
89		F	.....	121	118	3	38	21	7	10	6	82	12	3
90	Locomotor ataxia	M	72	60	60	.....	.....	.....	....	....	....	.....	....	....
91		F	.....	12	12	.....	.....	.....	....	....	....	.....	....	....
92	Other diseases of spinal cord	M	92	52	50	2	4	3	3	2	1	13	2	1
93		F	.....	40	39	1	1	1	....	4	2	8	2	....
94	Apoplexy	M	817	389	377	12	5	1	....	....	....	6	....	....
95		F	.....	428	417	11	3	.....	....	....	....	3	....	....
96	Softening of brain	M	37	23	22	1	.....	.....	....	....	....	.....	....	....
97		F	.....	14	14	.....	.....	.....	....	....	....	.....	....	....
98	Paralysis	M	58	23	23	.....	1	.....	....	....	....	1	....	1
99		F	.....	35	34	1	.....	.....	....	....	....	.....	....	....
100	General paralysis of insane	M	143	93	83	10	.....	.....	....	....	....	.....	....	....
101		F	.....	50	43	7	.....	.....	....	....	....	.....	....	....
102	Other forms of mental disease	M	30	11	10	1	.....	.....	....	....	....	.....	....	....
103		F	.....	19	19	.....	.....	.....	....	....	....	.....	....	....
104	Other diseases of brain	M	52	21	20	1	2	.....	2	1	....	5	1	2
105		F	.....	31	31	.....	2	.....	....	....	....	2	3	1
106	Epilepsy	M	41	21	20	1	4	.....	....	....	....	4	1	2
107		F	.....	20	18	2	.....	.....	....	....	....	.....	....	....
108	Convulsions	M	29	19	19	.....	19	.....	....	....	....	19	....	....
109		F	.....	10	9	1	9	1	....	....	....	10	....	....
110	Tetanus	M	52	44	44	.....	15	.....	....	....	....	15	4	9
111		F	.....	8	8	.....	3	.....	....	....	....	3	3	....
112	Other diseases of nervous sy-	M	72	40	40	.....	6	4	1	2	1	14	3	1
		F	.....	32	31	1	10	4	2	1	....	17	2	2
	S OF CIRCULA- YSTEM		3,870	.....	3,690	180	34	6	3	10	5	58	70	80
			2,134	.....	2,027	107	18	3	2	5	3	31	31	33
			1,736	.....	1,663	73	16	3	1	5	2	27	39	47

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
81	....	3	1	2	6	6	10	14	13	10	3	7	5	3	1	....	..	..	..	81
82	....	3	2	8	4	7	17	13	15	15	12	3	5	3	....	....	..	..	..	82
83	....	1	2	10	30	32	53	32	34	24	14	8	10	2	1	....	..	..	..	83
84	....	.....	.....	2	7	15	20	11	13	16	7	12	3	5	....	....	..	..	..	84
85	....	.....	1	1	.....	.....	.....	1	1	3	1	4	3	....	1	....	..	..	..	85
86	....	.....	1	.....	.....	.....	.....	2	1	.....	2	3	.....	3	....	1	..	..	..	86
87	2	7	4	6	5	16	14	22	17	21	14	17	11	4	2	....	..	..	..	87
88	1	3	6	7	8	11	5	12	6	12	10	4	5	2	2	....	..	..	..	88
89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	89
70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	70
71	7	5	5	6	3	2	10	5	3	4	3	1	.....	1	1	....	1	..	..	71
72	6	11	2	1	4	6	4	4	5	3	4	4	4	....	1	....	..	..	..	72
73	2	3	1	7	7	8	10	12	17	23	20	12	8	3	2	....	..	..	..	73
74	3	9	1	2	9	6	10	15	22	28	17	18	7	1	....	....	..	..	..	74
75	3	.....	4	3	5	2	6	10	4	5	5	1	5	....	1	....	..	..	..	75
76	1	3	3	4	5	4	5	6	5	10	2	1	.....	1	1	....	..	..	..	76
77	1	3	1	7	11	8	7	1	5	2	1	1	.....	....	....	....	..	..	..	77
78	.....	.....	.....	.....	1	3	.....	.....	.....	.....	1	.....	.....	....	....	....	..	..	..	78
79	.....	.....	.....	.....	.....	.....	2	.....	.....	1	.....	1	.....	....	....	....	..	..	..	79
80	.....	1	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	80
81	1	.....	.....	1	2	1	3	2	.....	2	3	.....	1	....	....	....	..	..	..	81
82	2	4	2	9	8	10	2	6	1	.....	1	.....	..	....	....	....	..	..	..	82
83	2	33	36	56	68	112	130	132	137	141	145	143	120	77	46	11	1	..	..	83
84	11	18	14	37	43	72	67	82	70	75	69	73	57	32	17	7	..	..	..	84
85	10	15	22	19	25	40	63	50	67	66	76	70	63	45	29	4	1	..	..	85
86	....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	86
87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	87
88	5	4	4	10	7	3	6	3	5	1	1	1	.....	....	....	....	..	..	..	88
89	6	4	2	1	1	4	4	.....	2	.....	.....	.....	.....	....	....	....	..	..	..	89
90	....	.....	.....	1	....	11	13	12	5	9	5	2	1	....	1	....	..	..	..	90
91	....	.....	.....	.....	2	.....	.....	2	3	2	1	.....	.....	....	....	....	..	..	..	91
92	....	2	2	1	2	2	3	4	6	3	2	6	1	....	2	....	..	..	..	92
93	....	.....	.....	.....	2	3	7	1	3	4	2	3	1	3	1	....	..	..	..	93
94	....	2	2	6	5	21	20	43	41	45	52	54	49	25	13	5	..	..	..	94
95	1	2	4	7	9	17	35	35	43	52	61	51	46	37	22	3	..	..	..	95
96	....	.....	1	.....	2	2	1	2	2	2	3	4	2	1	....	1	..	..	..	96
97	....	.....	.....	.....	.....	.....	1	1	2	1	1	3	4	....	1	....	..	..	..	97
98	....	.....	.....	2	2	.....	.....	2	3	3	3	.....	2	3	....	1	..	..	..	98
99	....	.....	.....	.....	1	.....	3	2	1	2	4	7	7	2	4	1	1	..	..	99
100	1	2	1	5	13	22	18	13	6	6	3	1	2	....	....	....	..	..	..	100
101	....	.....	2	7	5	3	8	4	7	3	4	4	2	1	....	....	..	..	..	101
102	....	1	.....	2	1	2	.....	.....	.....	1	.....	3	.....	1	....	....	..	..	..	102
103	....	1	1	.....	3	2	3	1	3	1	.....	1	1	1	1	....	..	..	..	103
104	....	.....	.....	4	3	3	2	.....	.....	.....	.....	.....	.....	1	....	....	..	..	..	104
105	....	3	7	1	.....	7	2	1	3	.....	1	.....	.....	....	....	....	..	..	..	105
106	....	2	.....	2	2	2	2	1	.....	2	.....	1	.....	....	....	....	..	..	..	106
107	2	3	3	1	2	1	.....	2	.....	1	2	1	1	1	....	....	..	..	..	107
108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	108
109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	109
110	3	3	1	3	2	.....	.....	1	2	1	.....	.....	.....	....	....	....	..	..	..	110
111	....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	111
112	2	1	2	1	4	3	2	1	.....	2	.....	1	.....	1	1	....	..	..	..	112
113	1	2	2	2	.....	.....	.....	1	.....	.....	.....	.....	1	....	....	....	..	..	..	113
114	81	69	111	142	190	280	355	324	331	369	417	361	308	218	103	52	10	1	..	114
115	42	38	59	88	102	131	233	208	199	208	216	185	155	115	41	15	4	..	..	115
116	39	31	52	54	88	89	122	116	132	161	201	176	153	103	62	37	6	1	..	116

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	TOTALS BY COLORS		AGE							
					White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	III—DISEASES OF CIRCULATORY SYSTEM—Continued													
117	Pericarditis	M	29	20	19	1	2	.....	....	....	1	3	....	....
118		F	.....	9	9	.....	.....	2	....	....	....	2	2	....
119	Endocarditis	M	407	203	198	5	1	1	1	4	1	8	2	4
120		F	.....	204	198	6	5	.....	....	....	....	5	2	7
121	Heart disease	M	2,635	1,450	1,367	83	5	2	....	1	1	9	21	13
122		F	.....	1,185	1,127	58	2	1	1	5	2	11	22	32
123	Angina pectoris	M	92	55	55	.....	.....	.....	....	....	....	.....	....	1
124		F	.....	37	36	1	.....	.....	....	....	....	.....	....	1
125	Diseases of arteries	M	601	353	337	16	.....	.....	....	....	....	.....	....	....
126		F	.....	248	240	8	.....	.....	....	....	....	.....	....	1
127	Embolism and thrombosis	M	55	26	25	1	.....	.....	....	....	....	.....	....	....
128		F	.....	29	29	.....	.....	.....	....	....	....	.....	1	....
129	Diseases of Veins	M	18	8	8	.....	.....	.....	....	....	....	.....	....	....
130		F	.....	10	10	.....	.....	.....	....	....	....	.....	....	....
131	Diseases of lymphatics	M	6	2	2	.....	1	.....	....	....	....	1	....	....
132		F	.....	4	4	.....	.....	.....	....	....	....	.....	....	....
133	Other diseases of circulatory	M	27	17	16	1	4	.....	....	....	....	4	....	....
134	system	F	.....	10	10	.....	9	.....	1	....	....	10	1	1
135	IV—DISEASES OF RESPIRATORY SYSTEM		5,028	.....	4,871	157	5	.....	....	....	....	5	....	1
136	Males		2,870	.....	2,760	110	1,356	517	192	93	63	2,221	115	33
137	Females		2,158	.....	2,111	47	764	261	94	44	31	1,194	65	13
138	Laryngitis	M	3	1	1	.....	592	256	98	49	32	1,027	50	20
139		F	.....	2	2	.....	1	.....	....	....	....	1	....	....
140	Other diseases of larynx	M	18	9	9	.....	.....	.....	2	....	....	2	....	....
141		F	.....	9	9	.....	3	.....	1	3	....	7	1	....
142	Diseases of thyroid body	M	8	.....	.....	.....	1	.....	1	1	2	5	2	....
143		F	.....	8	8	.....	.....	.....	....	....	....	.....	....	1
144	Bronchitis, acute	M	89	41	39	2	25	7	4	....	....	36	....	....
145		F	.....	48	47	1	30	10	3	....	1	44	....	....
146	chronic	M	58	28	28	.....	1	1	....	....	....	2	1	....
147		F	.....	30	30	.....	.....	.....	....	....	....	.....	....	....
148	Broncho-pneumonia	M	1,567	806	788	18	412	132	41	17	12	614	24	3
149		F	.....	761	752	9	339	127	47	19	8	540	20	4
150	Pneumonia—lobar and un-	M	3,146	1,906	1,819	87	313	118	47	24	18	520	38	8
151	qualified	F	.....	1,240	1,204	36	214	118	44	29	20	425	27	17
152	Pleurisy	M	64	39	37	2	2	2	1	....	....	5	1	2
153		F	.....	25	24	1	3	1	....	....	....	4	1	....
154	Congestion of lungs	M	24	13	13	.....	6	1	....	....	....	7	....	....
155		F	.....	11	11	.....	5	.....	....	....	....	5	....	....
156	Gangrene of lungs	M	7	5	5	.....	.....	.....	....	....	....	.....	....	....
157		F	.....	2	2	.....	.....	.....	....	....	....	.....	....	....
158	Asthma and emphysema	M	31	11	10	1	.....	.....	....	....	1	1	....	....
159		F	.....	20	20	.....	.....	.....	1	....	1	2	....	....
160	Hemorrhage of lungs	M	4	4	4	.....	.....	.....	....	....	....	.....	....	....
161		F	.....	.....	.....	.....	.....	.....	....	....	....	.....	....	....
162	Other diseases of respiratory	M	9	7	7	.....	1	.....	....	....	....	1	....	....
163	system	F	.....	2	2	.....	.....	.....	....	....	....	.....	....	....
164	V—DISEASES OF DIGESTIVE SYSTEM		4,925	.....	4,845	80	2,659	544	103	41	23	3,370	60	51
165	Males		2,749	.....	2,700	49	1,483	293	56	27	14	1,873	30	24
166	Females		2,176	.....	2,145	31	1,176	251	45	14	9	1,495	30	27
167	Diseases of mouth	M	8	6	5	1	3	.....	1	....	....	4	....	....
168		F	.....	2	2	.....	1	.....	....	....	....	1	....	....
169	Tonsillitis	M	12	8	8	.....	1	.....	3	....	1	5	2	....
170		F	.....	4	4	.....	1	1	....	....	....	2	....	1

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
117	3	2	.....	2	2	2	1	.....	1	2	.....	.....	.....	2	.....	.....	.....	.....	.....	117
118	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	118
119	5	7	2	9	11	6	20	16	15	19	24	20	16	8	4	2	.....	.....	.....	119
120	.....	3	8	3	10	11	10	18	15	21	25	19	17	11	6	7	.....	.....	.....	120
121	34	25	51	71	77	103	184	167	144	142	133	105	85	45	19	6	2	.....	.....	121
122	38	27	42	48	73	69	97	82	93	110	135	115	84	54	31	7	2	1	.....	122
123	.....	.....	.....	.....	1	2	4	6	8	10	9	7	3	3	.....	1	.....	.....	.....	123
124	.....	.....	.....	.....	.....	3	4	3	5	4	7	5	3	1	1	.....	.....	.....	.....	124
125	.....	.....	1	4	7	13	20	17	26	32	49	51	48	59	18	6	2	.....	.....	125
126	1	.....	1	1	3	1	5	11	11	16	32	34	45	36	23	23	4	.....	.....	126
127	.....	1	3	1	3	5	2	1	4	3	.....	.....	3	.....	.....	.....	.....	.....	.....	127
128	.....	1	1	2	2	2	1	1	5	5	1	3	2	1	1	.....	.....	.....	.....	128
129	.....	3	.....	.....	.....	.....	2	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	129
130	.....	.....	.....	.....	.....	2	3	.....	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	130
131	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	131
132	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	132
133	.....	.....	2	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	133
134	.....	.....	.....	.....	.....	1	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	134
135	59	97	130	146	207	192	240	269	219	250	229	220	181	124	68	21	3	3	1	135
136	33	59	95	105	140	142	171	171	142	158	110	100	89	50	24	8	.....	.....	1	136
137	26	38	35	41	67	50	69	98	77	92	119	120	92	74	44	13	3	3	.....	137
138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	138
139	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	139
140	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	140
141	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	141
142	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142
143	.....	.....	1	.....	.....	.....	.....	1	2	1	1	.....	.....	.....	.....	.....	1	.....	.....	143
144	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	2	.....	.....	.....	.....	.....	144
145	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	145
146	.....	.....	1	.....	2	.....	.....	.....	2	5	5	5	.....	2	2	1	.....	.....	.....	146
147	.....	.....	.....	.....	.....	.....	3	.....	.....	1	4	3	6	6	4	1	2	.....	.....	147
148	4	3	3	6	5	11	14	13	15	18	18	19	11	17	5	3	.....	.....	.....	148
149	1	1	3	4	8	6	8	5	18	15	20	27	29	32	18	4	.....	.....	.....	149
150	28	52	88	92	132	123	150	155	119	123	83	70	76	28	16	4	.....	.....	.....	150
151	33	34	28	36	56	43	52	85	56	71	92	84	49	34	18	8	.....	3	.....	151
152	.....	2	3	5	.....	3	4	1	3	5	1	3	1	.....	.....	.....	.....	.....	.....	152
153	1	1	2	1	2	2	1	2	.....	2	1	1	2	.....	2	.....	.....	.....	.....	153
154	1	1	.....	.....	.....	.....	.....	.....	1	.....	.....	1	1	1	.....	.....	.....	.....	.....	154
155	1	1	1	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	155
156	.....	.....	.....	.....	1	1	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	156
157	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	157
158	.....	.....	.....	.....	.....	1	1	1	1	3	1	1	.....	.....	1	.....	.....	.....	.....	158
159	.....	.....	.....	.....	1	.....	4	1	1	1	.....	3	5	2	.....	.....	.....	.....	.....	159
160	.....	.....	.....	1	.....	1	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	160
161	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	161
162	.....	1	.....	1	.....	2	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	162
163	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	163
164	56	85	85	96	121	144	161	126	126	138	92	80	61	36	23	11	2	1	.....	164
165	28	53	49	57	71	89	102	78	71	77	46	44	27	16	9	3	.....	.....	.....	165
166	28	32	36	39	50	55	59	48	55	61	46	36	34	20	14	8	2	1	.....	166
167	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	167
168	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	168
169	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	169
170	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	170

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	Totals by Colors: White	Totals by Colors: colored	Age: Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	V—DISEASES OF DIGESTIVE SYSTEM—Continued													
171	Other diseases of pharynx	M	13	9	9	.....	.....	1	.....	.....	2	3	.....	.....
172		F	.....	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
173	Ulcer of stomach	M	96	61	58	3	.....	.....	.....	.....	.....	.....	.....	.....
174		F	.....	35	33	2	.....	.....	.....	.....	.....	.....	.....	.....
175	Gastritis	M	82	40	39	1	9	2	.....	2	1	13	.....	.....
176		F	.....	42	42	.....	9	1	.....	.....	1	11	2	.....
177	Other diseases of stomach	M	15	11	11	.....	7	.....	.....	.....	.....	7	.....	.....
178		F	.....	4	4	.....	1	.....	.....	.....	.....	1	.....	.....
179	Dentition	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
180		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
181	Diarrhea and enteritis	M	3,469	1,897	1,869	28	1,435	265	51	22	5	1,798	10	1
182		F	.....	1,572	1,553	19	1,148	248	44	14	5	1,459	8	4
183	Hernia	M	116	73	69	4	9	1	1	.....	.....	11	1	.....
184		F	.....	43	43	.....	2	.....	.....	.....	.....	2	.....	1
185	Obstruction of intestines	M	125	72	71	1	15	1	1	.....	1	18	4	1
186		F	.....	53	50	3	10	.....	.....	.....	1	11	2	.....
187	Other diseases of intestines	M	42	15	14	1	2	.....	.....	1	.....	3	1	.....
188		F	.....	27	25	2	4	.....	.....	.....	.....	4	1	.....
189	Acute yellow atrophy of liver	M	4	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
190		F	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
191	Hydatid tumors of liver	M	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
192		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1
193	Cirrhosis of liver	M	311	291	286	5	.....	.....	.....	.....	.....	.....	.....	.....
194		F	.....	120	117	3	.....	1	.....	.....	.....	1	.....	.....
195	Biliary calculi	M	75	24	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
196		F	.....	51	50	1	.....	.....	.....	.....	.....	.....	.....	.....
197	Other diseases of liver	M	71	33	33	.....	1	1	.....	.....	1	3	1	.....
198		F	.....	38	38	.....	.....	.....	.....	1	.....	2	.....	1
199	Diseases of spleen	M	3	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
200		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
201	Peritonitis	M	20	10	10	.....	1	.....	.....	1	.....	2	.....	.....
202		F	.....	10	10	.....	.....	.....	.....	.....	.....	.....	2	.....
203	Appendicitis	M	356	192	187	5	.....	.....	2	.....	2	4	8	11
204		F	.....	164	163	1	.....	.....	.....	.....	.....	1	1	15
205	Other diseases of digestive system	M	6	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
206		F	.....	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
207	VI—DISEASES OF GENITO-URINARY SYSTEM		2,633	.....	2,543	90	67	19	10	7	7	110	21	12
208	Males		1,467	.....	1,419	48	34	16	8	6	5	69	9	13
209	Females		1,166	.....	1,124	42	33	3	2	1	2	41	12	9
210	Acute nephritis	M	268	142	137	5	12	6	4	5	3	30	5	6
211		F	.....	126	122	4	22	1	1	.....	1	25	3	2
212	Bright's disease	M	80	50	1,150	40	10	10	4	1	2	27	4	7
213		F	.....	30	798	22	8	2	1	1	1	13	3	6
214	Other diseases of kidneys	M	12	9	25	1	8	.....	.....	.....	.....	8	.....	.....
215		F	.....	3	16	1	2	.....	.....	.....	.....	2	.....	.....
216	Calculi of urinary tract	M	21	14	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
217		F	.....	7	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
218	Diseases of bladder	M	19	16	15	1	1	.....	.....	.....	.....	1	.....	.....
219		F	.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
220	Uterine tumor	M	48	48	39	9	.....	.....	.....	.....	.....	.....	.....	.....
221	Other diseases of uterus	F	31	31	30	1	.....	.....	.....	.....	.....	.....	.....	.....
222	Ovarian tumor	F	21	21	21	.....	.....	.....	.....	.....	.....	.....	.....	.....
223	Diseases of tubes	F	84	84	80	4	.....	.....	.....	.....	.....	.....	1	.....
224	Other diseases of genito-urinary system	M	93	79	78	1	3	.....	.....	.....	.....	3	.....	.....
225		F	.....	14	13	1	1	.....	.....	.....	.....	1	.....	.....
226	VII—CHILDBIRTH		356	.....	346	10	.....	.....	.....	.....	.....	.....	.....	1
227	Puerperal septicemia	F	189	189	186	3	.....	.....	.....	.....	.....	.....	.....	.....
228	Puerperal convulsions	F	50	50	49	1	.....	.....	.....	.....	.....	.....	.....	1

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE.—1909.—*Continued.*

Line No.	AGE																			Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
171	....	2	.....	.....	1	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	..	..	..	171
172	1	.....	.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	..	..	..	172
173	....	3	4	6	7	9	10	5	5	4	2	2	3	1	....	....	..	..	..	173
174	....	4	3	1	3	1	3	5	5	3	4	1	.....	1	1	....	..	..	..	174
175	1	3	1	2	.....	1	.....	5	.....	3	3	3	3	1	1	....	..	..	..	175
176	....	.....	.....	.....	2	1	.....	1	2	2	3	6	4	5	2	1	..	..	..	176
177	....	.....	.....	.....	.....	.....	2	.....	.....	1	.....	1	.....	....	....	....	..	..	..	177
178	....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	1	....	....	....	..	..	..	178
179	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	179
180	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	180
181	13	3	4	4	6	5	8	4	4	12	8	6	7	8	4	2	..	..	..	181
182	7	4	2	2	8	6	1	3	5	5	10	14	15	5	6	5	2	1	..	182
183	1	1	.....	5	3	5	5	4	7	9	8	3	7	2	3	....	..	..	..	183
184	....	.....	1	1	1	1	3	3	5	7	9	3	2	3	1	....	..	..	..	184
185	4	6	3	3	....	2	5	4	5	10	2	1	2	1	1	....	..	..	..	185
186	....	2	1	6	6	6	1	3	5	2	.....	2	3	1	2	....	..	..	..	186
187	....	.....	1	.....	1	.....	3	.....	1	2	1	1	.....	.....	.....	1	..	..	..	187
188	1	.....	1	2	1	2	4	3	.....	1	4	1	1	....	1	....	..	..	..	188
189	....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	189
190	....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	190
191	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	191
192	....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	192
193	2	5	10	19	25	42	40	38	34	27	20	22	3	2	1	....	..	..	..	193
194	....	.....	3	6	8	10	23	13	15	20	12	1	4	3	....	1	..	..	..	194
195	....	.....	.....	.....	1	2	7	3	3	3	....	4	.....	1	....	....	..	..	..	195
196	....	1	3	.....	3	7	5	8	4	10	2	6	1	1	....	....	..	..	..	196
197	....	2	3	1	3	1	4	5	7	1	1	.....	1	....	....	....	..	..	..	197
198	1	1	2	1	3	4	5	1	3	7	2	1	2	1	1	....	..	..	..	198
199	....	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	199
200	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	200
201	....	.....	.....	1	2	.....	1	1	2	.....	.....	.....	1	.....	.....	.....	..	..	..	201
202	....	2	.....	.....	.....	2	1	1	1	.....	.....	.....	.....	.....	.....	1	..	..	..	202
203	17	26	21	13	22	19	16	9	4	3	1	1	.....	.....	.....	.....	..	..	..	203
204	18	17	19	18	15	14	10	4	9	2	.....	1	1	.....	.....	.....	..	..	..	204
205	....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	205
206	....	.....	.....	1	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	..	..	..	206
207	32	65	91	133	204	198	251	236	234	245	240	213	179	106	40	15	2	2	..	207
208	12	18	38	52	98	111	145	136	140	153	147	124	94	62	26	11	1	1	..	208
209	20	47	53	81	106	82	106	99	94	92	93	89	85	37	14	4	1	1	..	209
210	32	3	6	12	14	12	15	8	7	11	5	2	1	1	1	....	..	..	..	210
211	32	11	8	10	8	7	10	7	7	6	7	3	5	2	1	....	..	..	..	211
212	9	14	28	36	52	95	120	123	124	132	127	99	78	51	21	11	..	1	..	212
213	2	16	15	40	53	46	76	76	81	80	80	83	79	35	13	4	1	1	..	213
214	....	1	1	1	1	1	3	1	1	1	1	2	2	2	....	....	..	..	..	214
215	1	1	2	.....	2	2	2	.....	3	.....	1	1	.....	....	....	....	..	..	..	215
216	....	.....	2	1	.....	.....	4	.....	.....	4	1	1	1	....	....	....	..	..	..	216
217	....	1	.....	.....	1	2	1	1	.....	.....	1	.....	.....	....	....	....	..	..	..	217
218	....	.....	.....	.....	.....	2	.....	1	.....	.....	2	3	2	3	2	....	..	..	..	218
219	....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	1	....	....	....	..	..	..	219
220	1	2	4	4	6	10	11	8	1	1	.....	.....	.....	....	....	....	..	..	..	220
221	1	2	4	7	7	1	3	2	1	1	1	1	.....	....	....	....	..	..	..	221
222	....	1	.....	.....	5	3	2	3	1	3	2	1	.....	....	....	....	..	..	..	222
223	4	11	19	18	20	7	1	2	.....	1	.....	.....	.....	....	....	....	..	..	..	223
224	....	.....	1	2	.....	1	3	3	8	5	11	17	10	12	2	....	1	..	..	224
225	1	2	1	2	4	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	225
226	12	70	99	87	56	28	3	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	226
227	6	43	59	45	31	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	227
228	4	8	10	12	8	6	1	.....	.....	.....	.....	.....	.....	.....	.....	....	..	..	..	228

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	TOTALS BY COLORS		AGE							
					White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	VII—CHILDBIRTH—Continued													
229	Other causes incident to childbirth	F	117	117	111	6	.....	.....	....	....	....	....	....	....
230	VIII—DISEASES OF SKIN		81	.....	80	1	21	4	1	....	....	26	....	....
231	Males		45	.....	44	1	12	1	....	....	....	13	....	....
232	Females		36	.....	36	.....	9	3	1	....	....	13	....	....
233	Gangrene	M	33	16	16	.....	2	.....	....	....	....	2	....	....
234		F	.....	17	17	.....	.....	1	1	....	....	2	....	....
235	Carbuncle	M	17	12	11	1	1	1	....	....	....	2	....	....
236		F	.....	5	5	.....	1	1	....	....	....	2	....	....
237	Abscess	M	13	8	8	.....	3	.....	....	....	....	3	....	....
238		F	.....	5	5	.....	2	.....	....	....	....	2	....	....
239	Other diseases of skin	M	18	9	9	.....	5	1	....	....	....	6	....	....
240		F	.....	9	9	.....	6	1	....	....	....	7	....	....
241	IX—DISEASES OF LOCOMOTOR SYSTEM		55	.....	51	4	11	5	2	3	....	21	2	4
242	Males		31	.....	29	2	6	3	....	2	....	11	1	3
243	Females		24	.....	22	2	5	2	2	1	....	10	1	1
244	Diseases of bones	M	50	27	26	1	6	2	....	2	....	11	1	3
245		F	.....	23	21	2	4	2	2	1	....	9	1	1
246	Diseases of joints	M	5	4	3	1	.....	.....	....	....	....	.....	....	....
247		F	.....	1	1	.....	1	.....	....	....	....	1	....	....
248	Other diseases of locomotor	M	.....	.....	0	.....	.....	.....	....	....	....	.....	....	....
249	system	F	.....	.....	0	.....	.....	.....	....	....	....	.....	....	....
250	X—MALFORMATIONS		319	.....	317	2	302	5	3	1	2	313	2	3
251	Males		191	.....	190	1	185	4	1	....	1	191	....	3
252	Females		128	.....	127	1	117	1	2	1	1	122	2	3
253	Hydrocephalus	M	23	10	10	.....	10	.....	....	....	....	10	....	..
254		F	.....	13	12	1	12	.....	1	....	....	13	....	..
255	Congenital malformation of	M	180	116	115	1	112	2	1	....	1	116	....	..
256	heart (cyanosis)	F	.....	64	64	.....	57	.....	1	1	....	59	2	2
257	Other congenital malforma-	M	116	65	65	.....	63	2	....	....	....	65	....	..
258	tions	F	.....	51	51	.....	48	1	....	....	1	50	....	1
259	XI—DISEASES OF EARLY INFANCY		938	.....	923	15	938	.....	....	....	....	938	....	....
260	Males		528	.....	520	8	528	.....	....	....	....	528	....	....
261	Females		410	.....	403	7	410	....	....	....	....	410	....	....
262	Premature birth	M	622	340	335	5	340	.....	....	....	....	340	....	....
263		F	.....	282	279	3	282	.....	....	....	....	282	....	....
264	Congenital debility	M	316	188	185	3	188	.....	....	....	....	188	....	....
265		F	.....	128	124	4	128	.....	....	....	....	128	....	....
266	XII—OLD AGE		38	.....	38	.....	.....	.....	....	....	....	.....	....	....
267	Males		12	.....	12	.....	.....	.....	....	....	....	.....	....	....
268	Females		26	.....	26	.....	.....	.....	....	....	....	.....	....	....
269	XIII—VIOLENCE		2,716	.....	2,638	78	340	50	36	32	24	482	80	99
270	Males		2,131	.....	2,071	60	212	33	21	16	12	294	55	54
271	Females		585	.....	567	18	128	17	15	16	12	188	25	5

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	AGE																		Line No.
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
229	2	19	30	30	17	17	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	229
230	....	.....	1	3	4	4	5	3	5	3	4	6	9	4	2	2	..	..	..	230
231	....	.....	1	.....	2	3	4	3	1	2	4	3	5	3	....	1	..	..	..	231
232	....	.....	.....	3	2	1	1	.....	4	1	.....	3	4	1	2	1	..	..	..	232
233	....	.....	1	.....	.....	2	.....	.....	1	.....	1	3	3	3	....	....	..	..	..	233
234	....	.....	.....	1	1	.....	.....	.....	2	1	.....	3	3	1	2	1	..	..	..	234
235	....	.....	.....	.....	2	.....	2	2	.....	1	3	.....	.....	....	....	....	..	..	..	235
236	....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	1	....	....	....	..	..	..	236
237	....	.....	.....	.....	.....	1	2	.....	.....	1	.....	.....	1	....	....	....	..	..	..	237
238	....	.....	.....	2	.....	1	.....	.....	.....	.....	.....	.....	....	....	....	....	..	..	.	238
239	....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	....	....	1	..	..	.	239
240	....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	....	....	....	..	..	..	240
241	4	2	2	2	3	2	6	1	3	.....	2	1	.....	....	....	....	..	..	..	241
242	2	1	....	1	2	2	3	1	3	.....	1	.....	.....	....	....	....	..	..	..	242
243	2	1	2	1	1	.....	3	.....	.....	.....	1	1	.....	....	....	....	..	..	..	243
244	2	1	.....	.....	1	1	2	1	3	.....	1	.....	.....	....	....	....	..	..	..	244
245	2	1	2	1	1	.....	3	.....	.....	.....	1	1	.....	....	....	....	..	..	..	245
246	....	.....	.....	1	1	1	1	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	246
247	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	247
248	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	248
249	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	249
250	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	250
251	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	251
252	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	252
253	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	253
254	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	254
255	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	255
256	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	256
257	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	257
258	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	258
259	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	259
260	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	.	260
261	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	261
262	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	262
263	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	263
264	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	264
265	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	..	..	..	265
266	....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	7	6	14	2	1	..	..	266
267	....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	2	2	4	....	1	..	..	267
268	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5	4	10	2	..	..	..	268
269	92	206	241	233	247	223	257	176	134	88	68	47	37	26	14	4	..	1	..	269
270	77	151	200	195	211	202	213	154	118	77	47	35	24	14	6	4	..	..	..	270
271	15	55	41	38	36	21	44	22	16	11	21	12	13	12	8	....	..	1	..	271

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	CAUSE OF DEATH		Totals by Causes	Totals by Sex	TOTALS BY COLORS		AGE							
					White	Colored	Under 1	1 year	2 years	3 years	4 years	Under 5	5 to 9	10 to 14
	XIII—VIOLENCE—Continued													
272	Suicide	M	.....	.....	345	2	.....	.....	.....	.....	.....	.....	.....	.....
273		F	.....	.....	105	2	.....	.....	.....	.....	.....	.....	.....	.....
274	Fractures and dislocations	M	12	11	9	2	.....	.....	.....	.....	.....	.....	.....	.....
275		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
276	Burns and scalds	M	9	63	61	2	22	15	5	7	3	52	9	1
277		F	.....	76	75	1	3	6	8	8	8	33	11	.....
278	Heat and sunstroke	M	24	18	18	.....	.....	.....	.....	1	.....	1	.....	1
279		F	.....	6	5	1	.....	.....	.....	.....	.....	.....	.....	.....
280	Cold and freezing	M	4	3	3	.....	.....	.....	.....	.....	.....	.....	.....	1
281		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
282	Lightning	M	3	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
283		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
284	Drowning	M	109	100	98	2	1	1	.....	.....	.....	2	8	9
285		F	.....	9	9	.....	.....	1	1	1	.....	3	.....	.....
286	Inhalation of poisonous gases[1]	M	271	213	199	14	.....	.....	4	.....	1	5	2	.....
287		F	.....	58	55	3	.....	.....	.....	2	1	3	1	.....
288	Other accidental poisonings	M	54	38	38	.....	.....	5	5	1	1	12	.....	.....
289		F	.....	16	16	.....	1	2	.....	.....	.....	3	1	.....
290	Accidental gunshot wounds	M	18	17	16	1	.....	.....	.....	.....	.....	.....	3	1
291		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
292	Injuries by machinery	M	48	47	46	1	.....	.....	.....	.....	.....	.....	1	2
293		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
294	Injuries in mines and quarries	M	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
295		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
296	Railroad accidents and injuries	M	278	269	264	5	.....	.....	.....	.....	.....	.....	3	12
297		F	.....	9	9	.....	.....	.....	.....	.....	.....	.....	.....	1
298	Street car accidents	M	190	151	148	3	.....	1	2	1	2	6	12	4
299		F	.....	39	39	.....	.....	.....	.....	2	.....	2	6	.....
300	Injuries by vehicles and horses	M	109	96	95	1	.....	.....	2	1	2	5	12	4
301		F	.....	13	13	.....	.....	2	1	.....	1	4	4	.....
302	Automobile accidents	M	25	17	17	.....	.....	.....	.....	.....	.....	.....	1	2
303		F	.....	8	8	.....	.....	.....	.....	.....	.....	.....	.....	2
304	Suffocation	M	24	14	14	.....	11	.....	.....	.....	.....	11	.....	.....
305		F	.....	10	10	.....	10	.....	.....	.....	.....	10	.....	.....
306	Other accidental injuries	M	457	386	379	7	3	10	2	5	2	22	8	9
307		F	.....	71	69	2	.....	4	2	4	2	12	2	1
308	Injuries at birth	M	289	173	172	1	173	.....	.....	.....	.....	173	.....	.....
309		F	.....	96	94	2	96	.....	.....	.....	.....	96	.....	.....
310	Homicide	M	227	164	145	19	22	.....	2	.....	1	25	2	6
311		F	.....	63	56	7	18	.....	2	.....	.....	20	.....	.....
312	XIV—ILL. DEFINED CAUSES		24	.....	21	3	17	.....	.....	.....	.....	17	.....	.....
313	Males		16	.....	15	1	10	.....	.....	.....	.....	10	.....	.....
314	Females		8	.....	6	2	7	.....	.....	.....	.....	7	.....	.....
315	Dropsy	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
316		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
317	Heart failure	M	3	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
318		F	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
319	Other ill-defined causes	M	20	13	12	1	10	.....	.....	.....	.....	10	.....	.....
320		F	.....	7	5	2	7	.....	.....	.....	.....	7	.....	.....
321	Unknown causes	M	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
322		F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Includes "Conflagration."

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN CHICAGO, FROM EACH CAUSE AND CLASS OF CAUSES, BY SEX, COLOR AND AGE—1909.—*Continued.*

Line No.	AGE																		
	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 & Over	Unknown	
273	8	17	42	29	34	41	55	37	35	21	13	6	5	3	1	....	....	....	....	272
273	3	20	14	18	12	8	11	5	4	2	4	2	....	3	1	....	....	....	....	273
274	....	....	1	3	2	....	2	....	1	1	....	1	....	....	....	....	....	....	....	274
275	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	275
276	1	2	3	3	10	1	2	1	1	1	....	1	....	....	....	1	....	....	....	276
277	3	7	1	1	2	1	5	5	....	2	2	1	1	....	1	....	....	....	....	277
278	1	....	....	2	....	4	3	....	1	....	....	2	2	1	....	....	....	....	....	278
279	....	1	2	....	....	1	....	1	....	....	....	....	....	....	1	....	....	....	....	279
280	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	280
281	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	281
282	2	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	282
283	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	283
284	8	7	6	6	10	16	7	9	5	3	3	1	....	....	....	....	....	....	....	284
285	1	....	1	1	2	....	1	....	1	....	....	....	....	....	....	....	....	....	....	285
286	6	18	22	32	28	26	13	12	18	9	6	6	5	3	....	2	....	....	....	286
287	2	8	5	1	7	1	10	6	2	....	2	3	2	2	3	....	....	....	....	287
288	2	2	4	4	7	1	2	2	1	....	....	....	1	....	....	....	....	....	....	288
289	....	2	1	1	3	....	1	....	....	1	1	....	2	....	....	....	....	....	....	289
290	4	3	2	1	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	290
291	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	291
292	5	5	12	2	3	9	1	4	2	1	....	....	....	....	....	....	....	....	....	292
293	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	293
294	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	294
295	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	295
296	13	28	37	30	25	33	30	25	15	5	7	3	....	1	2	....	....	....	....	296
297	1	....	....	2	2	1	....	....	1	....	....	....	....	1	....	....	....	....	....	297
298	5	8	10	10	14	8	23	16	11	7	6	3	2	3	1	....	....	....	....	298
299	3	4	9	3	1	2	6	1	4	2	....	....	1	....	....	....	....	....	....	299
300	4	2	9	12	6	11	7	7	5	5	4	1	....	....	....	....	....	....	....	300
301	....	....	....	....	1	....	....	1	1	....	....	1	1	....	....	....	....	....	....	301
302	1	3	....	2	1	....	1	....	....	4	1	1	....	....	....	....	....	....	....	302
303	....	....	....	2	....	1	1	1	....	....	....	....	....	....	....	....	....	....	....	303
304	1	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	304
305	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	305
306	7	35	32	34	44	34	56	35	20	19	8	10	8	2	2	1	....	....	....	306
307	....	3	2	1	....	4	7	2	2	4	12	5	6	5	2	....	....	1	....	307
308	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	308
309	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	309
310	9	21	19	24	27	15	7	6	3	1	....	....	....	1	....	....	....	....	....	310
311	2	9	14	7	6	2	1	1	....	....	....	....	....	....	....	....	....	....	....	311
312	....	1	....	....	....	1	1	1	....	....	....	....	2	1	....	....	....	....	....	312
313	....	1	....	....	....	1	1	1	....	....	....	....	1	1	....	....	....	....	....	313
314	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	314
315	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	315
316	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	316
317	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	317
318	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	318
319	....	....	....	....	....	....	1	....	....	....	....	....	1	1	....	....	....	....	....	319
320	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	320
321	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	321
322	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	322

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SUMMARY STATEMENT OF CHICAGO'S MORTALITY FOR THE YEAR 1910.

Tabulations furnished by U. S. Bureau of Census.

Midyear Population—2,195,551.

SEX, COLOR, AGE AND CAUSE OF DEATH:	Number of Deaths
Total deaths, all causes	33,241
Death rate per annum per 1000	15.1
BY SEX:	
Males	19,169
Females	14,072
BY COLOR:	
White	32,130
Colored	1,111
BY AGES:	
Under 1 Year	6,841
1 to 4 years	3,278
5 to 19 years	2,057
20 to 59 years	13,863
60 years and over	7,196
Unknown age	6
BY IMPORTANT CAUSES:	
Typhoid fever	300
Smallpox	1
Measles	191
Scarlet fever	404
Whooping cough	173
Diphtheria and croup	822
Diphtheria	770
"Croup"	52
Influenza	146
Dysentery (all ages)	66
Under 2 years of age	26
2 years and over	40
Tuberculosis (total)	3,908
Tuberculosis of lungs	3,366
Other forms of tuberculosis	542
Cancer	1,804
Diabetes	348
Diseases of nervous system (total)	1,665
Simple meningitis	113
Cerebrospinal fever	43
Cerebrospinal meningitis	58
Cerebral hemorrhage, apoplexy	839
"Convulsions"	36
Other diseases of nervous system	576
Pericarditis	24
Acute endocarditis	253
Organic diseases of the heart	2,942
Angina pectoris	104
Bronchitis (total)	171
Acute bronchitis	76
Chronic bronchitis	95
Bronchopneumonia	1,760
Pneumonia	3,526
Lobar pneumonia	1,618
"Pneumonia" (undefined)	1,908
Diarrhea and enteritis (all ages)	3,816
Under 2 years of age	3,511
2 years and over	305
Acute nephritis	239
Bright's disease	2,361
External causes	2,552
Suicide	458
Accident	1,865
Homicide	201
Legal execution (1)	....
Sunstroke (2)	28
All other and unknown causes	5,765

(1) Included in "accident." (2) Includes all deaths from "effects of heat."

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CHRONOLOGICAL SUMMARY

OF THE

PRINCIPAL CAUSES OF MORTALITY

CITY OF CHICAGO

FOR THE FORTY YEARS, 1871-1910

THE GENERAL MORTALITY, GROSS DEATH RATES AND POPULATIONS
BEING SHOWN FOR THE SIXTY-EIGHT YEARS, 1843-1910

WITH GRAPHIC PRESENTATIONS OF THE DEATH RATES FOR ALL
IMPORTANT DISEASES AND CAUSES

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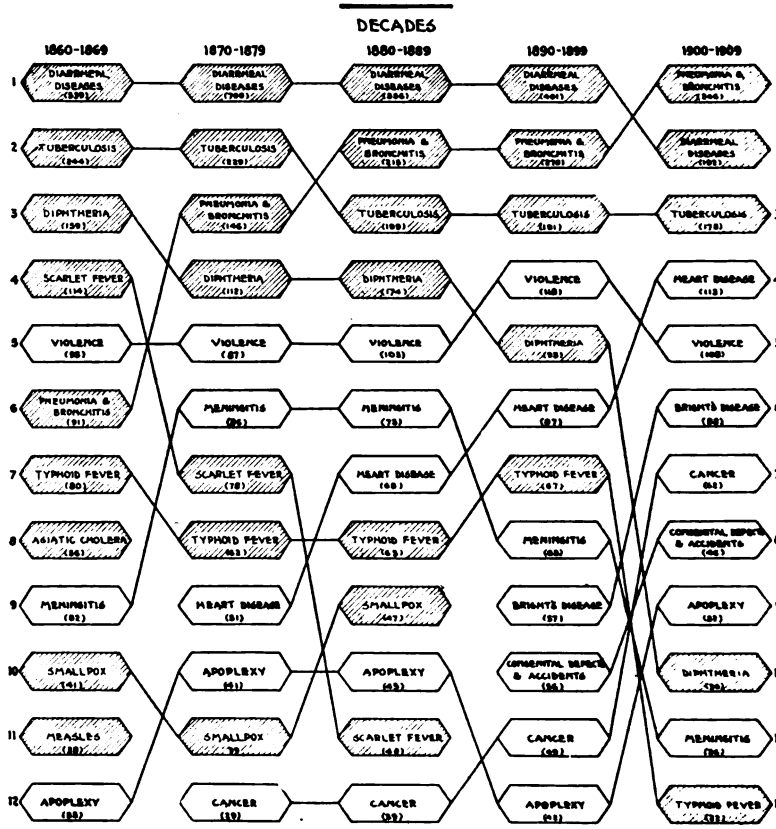
TWELVE CHIEF CAUSES OF DEATH IN CHICAGO.

BY DECADES, 1860-1909.

CAUSES NAMED IN ORDER OF HIGHEST DEATH RATE.

AVERAGE RATES PER 100,000 OF POPULATION IN PARENTHESIS.



THE PREVENTABLE DISEASES ARE INDICATED BY SHADING. NOTE THE GRADUAL ELIMINATION OF THE SHADY SPOTS

DEPT OF HEALTH, CHICAGO EDUCATIONAL

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Chicago Population, Deaths and Death Rates, by Years: Averages by Decades, 1843-1910, Inclusive.

Years	Population	Number of deaths	Number of deaths in 1000 of population
1843	7,580	141	18.60
1844	10,170	336	33.04
1845	12,088	344	28.46
1846	14,169	394	27.81
1847	16,859	572	33.93
1848	20,023	638	31.86
1849	23,047	1,701	73.80
1850	29,963	1,467	48.96
1851	34,000	927	27.26
1852	38,734	1,809	46.70
1853	59,130	1,325	22.41
1854	65,872	4,217	64.02
1855	80,023	2,181	27.26
1856	84,113	2,086	24.80
1857	87,600	2,414	27.56
1858	90,000	2,255	25.06
1859	93,000	2,008	21.59
1860	109,206	2,264	20.73
1861	120,000	2,279	18.99
1862	138,186	2,835	20.52
1863	150,000	3,875	25.83
1864	169,353	4,448	26.26
1865	178,492	4,029	22.57
1866	200,418	6,524	32.55
1867	225,000	4,773	21.21
1868	252,054	5,984	23.74
1869	280,000	6,488	23.17
1870	306,605	7,323	23.88
1871	334,270	6,976	20.87
1872	367,396	10,156	27.64
1873	380,000	9,557	25.15
1874	395,408	8,025	20.30
1875	400,500	7,899	19.72
1876	407,661	8,573	21.03
1877	430,000	8,026	18.67
1878	436,731	7,422	16.99
1879	491,516	8,614	17.53
1880	503,185	10,462	20.79
1881	540,000	14,101	26.11
1882	560,693	13,234	23.60
1883	580,000	11,555	19.92
1884	629,895	12,471	19.80
1885	665,000	12,474	18.76
1886	703,715	13,699	19.47
1887	760,000	15,409	20.27
1888	802,651	15,772	19.65
1889	935,000	16,946	18.12
1890	1,099,850	21,856	19.87
1891	1,148,795	27,754	24.16
1892	1,199,730	26,219	21.85
1893	1,253,022	27,083	21.61
1894	1,308,682	23,892	18.26
1895	1,366,813	24,219	17.72
1896	1,427,527	23,257	16.29
1897	1,490,937	21,809	14.63
1898	1,557,164	22,793	14.64
1899	1,626,333	25,503	15.68
1900	1,698,575	24,941	14.68
1901	1,751,968	24,406	13.93
1902	1,801,255	26,455	14.69
1903	1,850,542	28,914	15.62
1904	1,899,829	26,311	13.85
1905	1,949,116	27,212	13.96
1906	1,998,403	29,048	14.54
1907	2,047,690	32,198	15.72
1908	2,096,977	30,388	14.49
1909	2,146,264	31,296	14.58
1910	2,195,551	33,241	15.14

Averages by Decades, 1843-1910.

1843-1850 (8 years)	16,737	599	37.06
1851-1860	74,168	2,149	30.74
1861-1870	202,011	4,856	23.87
1871-1880	414,667	8,571	20.87
1881-1890	727,679	14,752	20.56
1891-1900	1,407,758	24,747	17.95
1901-1910	1,973,760	28,947	14.65

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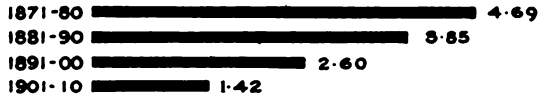
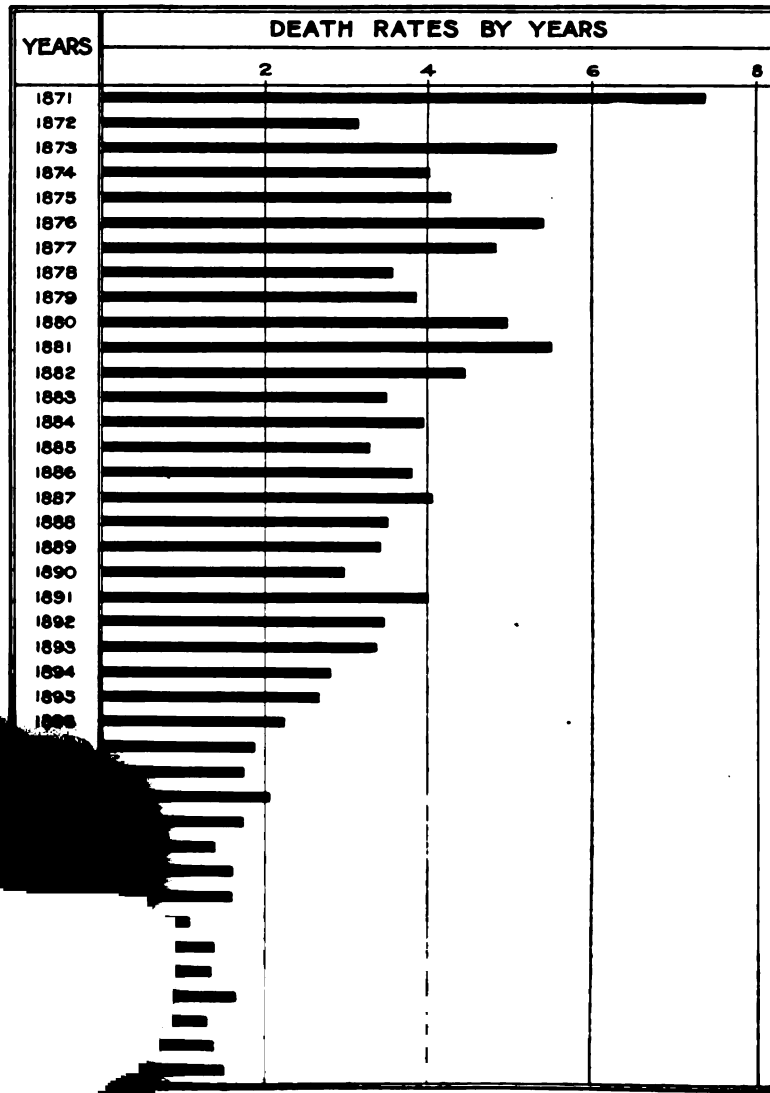
CHILD MORTALITY: ONE TO FIVE YEARS.

DEATHS PER 1000 OF POPULATION.

Average death rates for stated decades.





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DEATHS FROM ALL CAUSES.

(EXCLUSIVE OF STILL BIRTHS.)

Totals as reported by months and years — Death rate per 1000 of population — Averages by decades. 1871-1910.

YEARS	January	February	March	April	May	June	July	August	September	October	November	December	Totals	Death Rate per 1000
1871	451	400	470	421	525	558	980	890	694	542	516	529	6976	20.87
1872	567	632	745	756	630	813	1373	1551	989	741	650	709	10156	27.64
1873	711	586	637	611	660	658	1504	1423	1009	644	549	565	9557	25.15
1874	554	472	508	486	509	542	1454	1220	811	576	440	453	8025	20.30
1875	568	449	549	644	603	533	1171	986	764	538	508	586	7899	19.72
1876	578	558	633	575	547	544	1071	1120	790	729	713	715	8573	21.03
1877	739	607	616	629	627	562	1096	868	644	593	522	523	8026	18.67
1878	572	481	578	508	486	453	1067	814	663	587	591	622	7422	16.99
1879	664	533	646	592	555	639	1093	1002	677	699	719	795	8614	17.53
1880	785	747	833	892	770	896	1342	1019	812	768	768	830	10462	20.79
1881	987	838	876	992	1301	998	1822	1730	1211	1101	1069	1176	14101	26.11
1882	1390	1159	1271	1003	1073	1016	1251	1458	1032	824	820	937	13234	23.60
1883	966	859	968	922	910	837	1470	1103	970	840	783	927	11555	19.92
1884	862	792	905	1025	1036	1041	1583	1224	1012	910	956	1125	12471	19.80
1885	1095	946	953	1054	1136	885	1493	1188	1044	869	907	904	12474	18.76
1886	968	999	1222	1253	1021	1095	1415	1352	1145	1043	1077	1109	13699	19.47
1887	1261	1170	1518	1204	1096	1239	2107	1384	1120	1163	1075	1072	15409	20.27
1888	1502	1295	1315	1411	1180	1181	1797	1557	1211	1114	1052	1157	15772	19.65
1889	1255	1072	1260	1159	1240	1032	1958	1703	1601	1583	1504	1579	16946	18.12
1890	2501	2020	2065	1602	1613	1642	2146	2054	1580	1453	1480	1700	21856	19.87
1891	1990	1924	3405	3450	2585	1797	2275	2270	1966	1910	1865	2317	27754	24.16
1892	2779	2275	2129	2093	2016	1900	2832	2540	1984	1822	1804	2045	26219	21.85
1893	2273	2012	2415	2545	2403	1935	2928	2573	2222	1943	1798	2036	27083	21.61
1894	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892	18.26
1895	2088	2352	2127	1984	1885	1773	2439	2039	2015	2020	1726	1771	24219	17.72
1896	2013	1988	1988	2086	1804	1895	2457	2261	1658	1726	1568	1813	23257	16.29
1897	2026	1772	1921	1728	1702	1620	2275	1967	1679	1716	1613	1790	21809	14.63
1898	1835	2023	2316	2133	2022	1581	1938	1977	1780	1607	1732	1849	22793	14.64
1899	2498	2240	2343	2386	2066	1918	2360	2113	1822	1961	1790	2006	25503	15.68
1900	2291	2105	2547	2392	2088	1699	2069	2138	1884	1802	1752	2174	24941	14.68
1901	2240	1933	1958	2116	2046	1805	2263	2169	2070	1829	1811	2166	24406	13.93
1902	2229	2230	2363	2272	2129	1963	2279	2328	2084	1964	2007	2607	26455	14.69
1903	2573	2570	2713	2628	2675	2042	2390	2255	2067	1962	2124	2915	28914	15.62
1904	2374	2709	2613	2482	2222	1747	1960	2112	1957	1894	1902	2339	26311	13.85
1905	2487	2421	2592	2287	2180	1951	2280	2436	2101	2153	2065	2259	27212	13.96
1906	2566	2217	2463	2774	2557	1947	2313	2487	2327	2333	2386	2678	29048	14.54
1907	3076	2973	3045	2947	3021	2333	2277	2857	2526	2247	2270	2626	32198	15.72
1908	3129	2849	2852	2546	2430	2045	2371	2691	2307	2354	2382	2452	30388	14.49
1909	2778	2457	3018	2843	2673	2237	2249	2699	2567	2592	2448	2735	31296	14.58
1910	2916	2692	3324	2797	2964	2593	2774	2745	2474	2461	2594	2907	33241	15.14

AVERAGES BY DECADES — 1871-1910.

1871-80	**619**	**547**	**621**	**611**	**591**	**620**	**1215**	**1089**	**785**	**642**	**598**	**633**	**8571**	**20.87**
1881-90	**1279**	**1115**	**1235**	**1162**	**1161**	**1097**	**1704**	**1475**	**1193**	**1090**	**1072**	**1169**	**14752**	**20.56**
1891-00	**2160**	**2019**	**2301**	**2293**	**2071**	**1815**	**2436**	**2213**	**1911**	**1842**	**1728**	**1958**	**24747**	**17.95**
1901-10	**2637**	**2505**	**2694**	**2569**	**2490**	**2066**	**2316**	**2478**	**2248**	**2179**	**2197**	**2568**	**28947**	**14.65**

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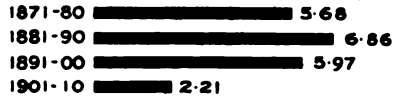
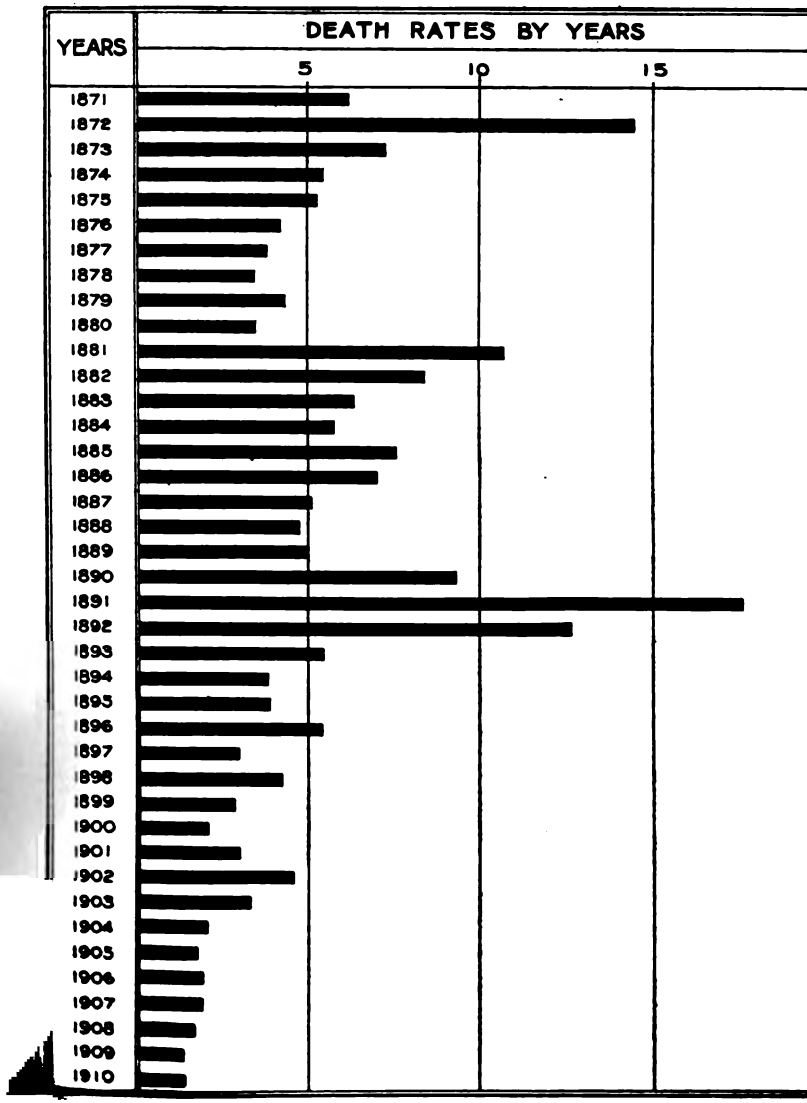
TYPHOID FEVER.
DEATHS PER 10,000 OF POPULATION.

Average death rates of the stated decades.





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TYPHOID FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10,000 of population—Averages by decades, 1871–1910.

YEARS	MONTHS												TYPHOID FEVER MORTALITY	
	January	February	March	April	May	June	July	August	September	October	November	December	Total	Percentages of total mortality	Per 10,000 of population
1871	8	7	8	9	10	....	12	....	....	18	75	57	204	2.92	6.10
1872	19	11	13	12	19	10	17	94	140	107	49	33	524	5.16	14.26
1873	17	8	6	11	12	13	12	31	52	55	38	17	272	2.85	7.16
1874	13	11	11	11	5	7	10	28	33	36	25	21	211	2.63	5.34
1875	11	8	10	10	9	4	12	19	46	44	17	17	207	2.62	5.17
1876	....	....	....	....	....	....	....	....	....	....	....	....	168	1.96	4.12
1877	7	9	11	2	5	7	19	16	30	25	20	8	159	1.98	3.70
1878	6	10	9	9	6	6	17	16	25	17	15	10	146	1.97	3.34
1879	12	13	11	7	11	14	8	33	33	30	17	19	208	2.41	4.23
1880	7	10	8	11	8	10	11	22	26	31	14	13	171	1.63	3.40
1881	13	15	13	10	29	24	23	98	94	123	73	53	568	4.03	10.52
1882	62	39	25	15	26	16	26	52	59	66	38	38	462	3.49	8.24
1883	22	13	17	16	13	17	23	50	44	41	45	60	361	3.12	6.22
1884	42	26	13	18	19	23	22	48	36	39	34	34	354	2.84	5.62
1885	33	14	17	21	38	32	79	67	91	33	39	32	496	3.98	7.46
1886	19	23	35	45	37	30	36	57	54	66	52	29	483	3.53	6.86
1887	26	24	41	35	23	13	35	48	41	40	38	18	382	2.48	5.03
1888	21	20	9	19	19	16	32	50	60	46	40	43	375	2.38	4.67
1889	30	21	15	12	16	18	29	64	77	68	68	35	453	2.67	4.84
1890	53	136	103	45	82	107	86	115	95	72	67	47	1008	4.61	9.16
1891	67	61	71	136	408	167	200	182	198	171	150	186	1997	7.20	17.38
1892	311	187	76	56	70	55	211	179	138	92	67	47	1489	5.68	12.41
1893	41	30	41	58	56	60	55	76	86	81	43	43	670	2.47	5.35
1894	46	26	27	30	31	31	37	52	71	68	38	34	491	2.06	3.75
1895	30	21	26	30	30	18	36	59	76	90	60	42	518	2.14	3.79
1896	87	89	65	33	31	44	58	64	87	89	60	44	751	3.23	5.26
1897	38	46	41	19	13	23	27	42	48	61	44	35	437	2.00	2.93
1898	29	32	41	94	67	35	55	45	65	62	56	55	636	2.79	4.08
1899	44	24	18	23	25	28	41	62	58	44	43	32	442	1.73	2.72
1900	23	14	27	23	19	17	26	34	34	38	39	43	337	1.35	1.98
1901	26	16	15	20	24	9	55	83	74	102	54	31	509	2.09	2.91
1902	21	14	20	16	24	22	44	193	165	78	72	132	801	3.03	4.45
1903	97	55	49	33	26	21	29	59	82	45	56	36	588	2.03	3.18
1904	30	33	34	35	24	18	28	34	36	33	32	36	373	1.42	1.96
1905	29	15	24	19	16	24	27	39	32	43	22	39	329	1.21	1.69
1906	27	19	28	34	29	29	20	29	49	37	39	30	370	1.27	1.85
1907	25	32	20	18	16	16	24	56	52	37	44	32	372	1.16	1.82
1908	38	22	35	12	21	20	18	29	42	31	34	30	332	1.09	1.58
1909	21	35	40	20	13	12	14	14	24	38	24	16	271	0.87	1.26
1910	21	14	19	17	13	10	25	31	41	35	46	28	300	0.90	1.37

AVERAGES BY DECADES, 1871–1910.

1871–1880	11	10	10	9	9	9	13	32	48	40	30	22	227	2.61	5.68
1881–1890	32	33	29	24	30	30	39	65	65	59	49	39	494	3.31	6.86
1891–1900	72	53	43	50	75	48	75	79	86	80	60	56	777	3.07	5.97
1901–1910	34	26	28	22	21	18	28	57	60	48	42	41	425	1.51	2.21

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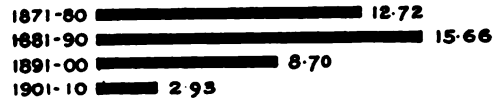
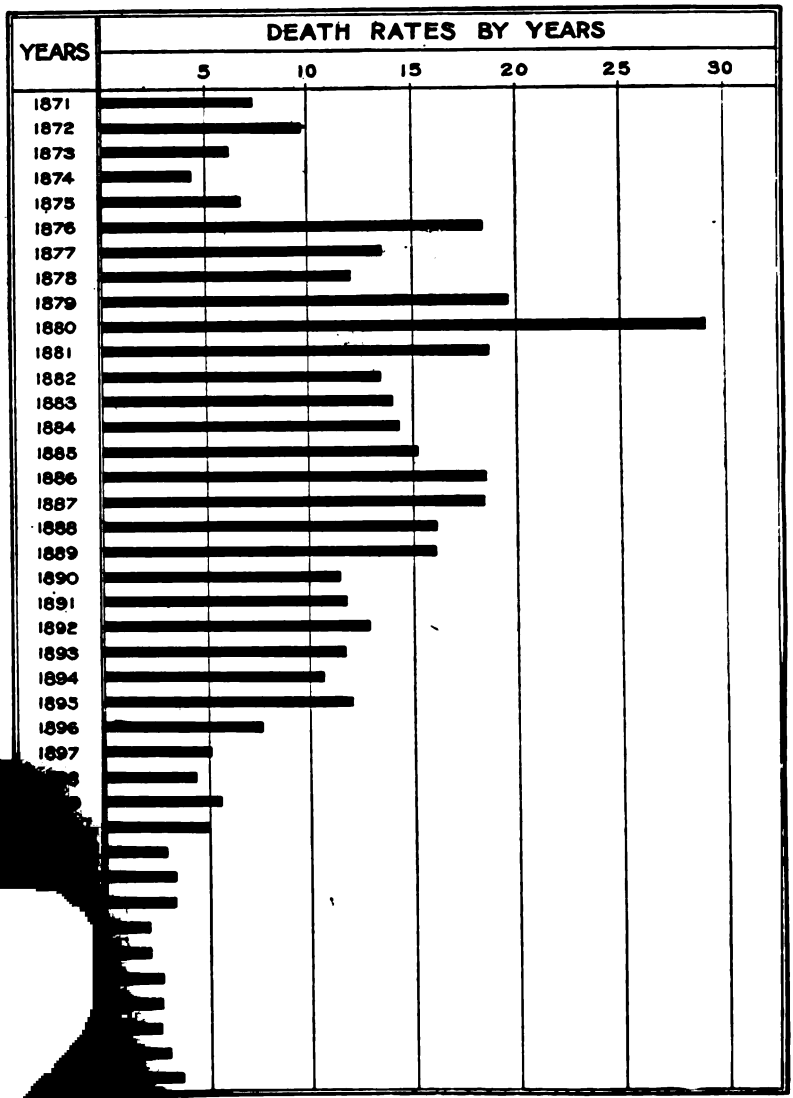
DIPHTHERIA AND CROUP.

DEATHS PER 10,000 OF POPULATION.

Average death rates of the stated decades.





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DIPHTHERIA AND CROUP.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10,000 of population—Averages by decades, 1871-1910.

YEARS	MONTHS												DIPHTHERIA AND CROUP MORTALITY	
	January	February	March	April	May	June	July	August	September	October	November	December	Total	Percentages of total mortality	Per 10,000 of population
1871	42	29	25	17	20	11	12	....	....	31	28	31	246	3.53	7.36
1872	32	17	24	22	21	20	12	27	41	50	36	55	357	3.52	9.72
1873	33	15	26	22	18	23	12	9	21	21	20	16	236	2.47	6.21
1874	24	8	16	8	12	7	7	11	9	24	24	24	174	2.17	4.40
1875	21	18	16	19	18	13	21	14	16	21	45	47	269	3.41	6.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	752	8.77	18.45
1877	87	55	33	36	35	20	20	29	45	86	74	64	584	7.28	13.58
1878	43	42	28	34	16	14	11	17	53	99	90	78	525	7.07	12.02
1879	68	44	74	59	44	34	34	77	92	124	140	178	968	11.24	19.69
1880	156	130	116	100	78	79	90	77	122	165	176	174	1463	13.98	29.07
1881	143	85	70	65	73	66	38	69	86	114	109	91	1009	7.16	18.69
1882	70	61	83	59	88	53	36	42	45	64	75	77	753	5.69	13.43
1883	104	53	66	65	52	49	44	51	62	81	88	102	817	7.07	14.09
1884	66	51	53	48	72	45	43	47	53	104	164	159	905	7.26	14.37
1885	113	76	69	94	63	49	44	60	103	111	118	112	1012	8.11	15.22
1886	114	77	80	90	96	86	66	92	92	151	207	152	1303	9.51	18.52
1887	159	113	113	91	103	85	45	91	125	164	165	151	1405	9.12	18.49
1888	174	121	119	107	87	83	59	65	98	121	136	127	1297	8.22	16.16
1889	138	107	135	109	101	101	65	90	104	199	187	173	1509	7.90	16.14
1890	169	131	129	120	84	53	52	67	101	92	124	139	1261	4.77	11.47
1891	133	117	118	75	88	69	58	93	107	154	182	164	1358	4.89	11.82
1892	161	124	141	102	102	60	43	77	110	192	210	226	1548	5.90	12.90
1893	190	132	143	109	114	94	74	89	92	147	139	144	1467	5.42	11.71
1894	113	76	87	64	67	73	67	88	117	185	232	237	1406	5.88	10.74
1895	211	126	109	84	55	80	87	114	134	254	212	176	1642	6.78	12.01
1896	125	116	92	85	59	57	62	53	106	132	96	115	1098	4.72	7.62
1897	89	44	64	56	70	72	46	48	53	65	87	80	774	3.55	5.19
1898	74	72	46	30	32	32	52	43	53	70	92	84	680	2.98	4.37
1899	93	74	60	66	61	65	48	63	79	100	99	109	917	3.60	5.64
1900	120	91	84	71	61	59	42	34	44	82	78	74	840	3.37	4.95
1901	61	44	41	39	32	43	27	31	36	42	58	61	515	2.11	2.94
1902	52	49	67	41	31	45	36	34	38	65	86	83	627	2.37	3.48
1903	41	53	52	48	42	54	38	31	53	79	83	63	637	2.20	3.44
1904	44	39	32	27	28	26	21	17	28	39	44	64	409	1.55	2.15
1905	53	32	30	32	18	28	23	20	40	52	54	51	433	1.59	2.22
1906	54	39	45	38	33	25	38	22	31	58	81	90	554	1.91	2.77
1907	75	53	33	52	43	43	22	21	35	65	50	63	555	1.72	2.71
1908	60	49	39	28	26	30	22	30	40	66	79	86	555	1.83	2.65
1909	71	53	87	62	44	48	26	35	34	73	79	68	680	2.17	3.17
1910	65	61	61	60	70	53	60	47	45	86	118	96	822	2.47	3.74

AVERAGES BY DECADES, 1871-1910.

1871-1880	**56**	**40**	**40**	**35**	**25**	**25**	**24**	**33**	**50**	**69**	**70**	**74**	**557**	**6.34**	**12 72**
1881-1890	**125**	**88**	**92**	**85**	**82**	**67**	**49**	**67**	**87**	**120**	**137**	**128**	**1127**	**7.48**	**15 66**
1891-1900	**131**	**97**	**94**	**74**	**71**	**66**	**58**	**70**	**90**	**138**	**143**	**141**	**1173**	**4.71**	**8.70**
1901-1910	**58**	**47**	**49**	**43**	**37**	**39**	**31**	**29**	**38**	**62**	**73**	**73**	**579**	**1.96**	**2.93**

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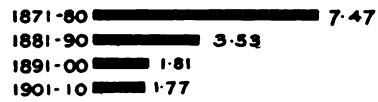
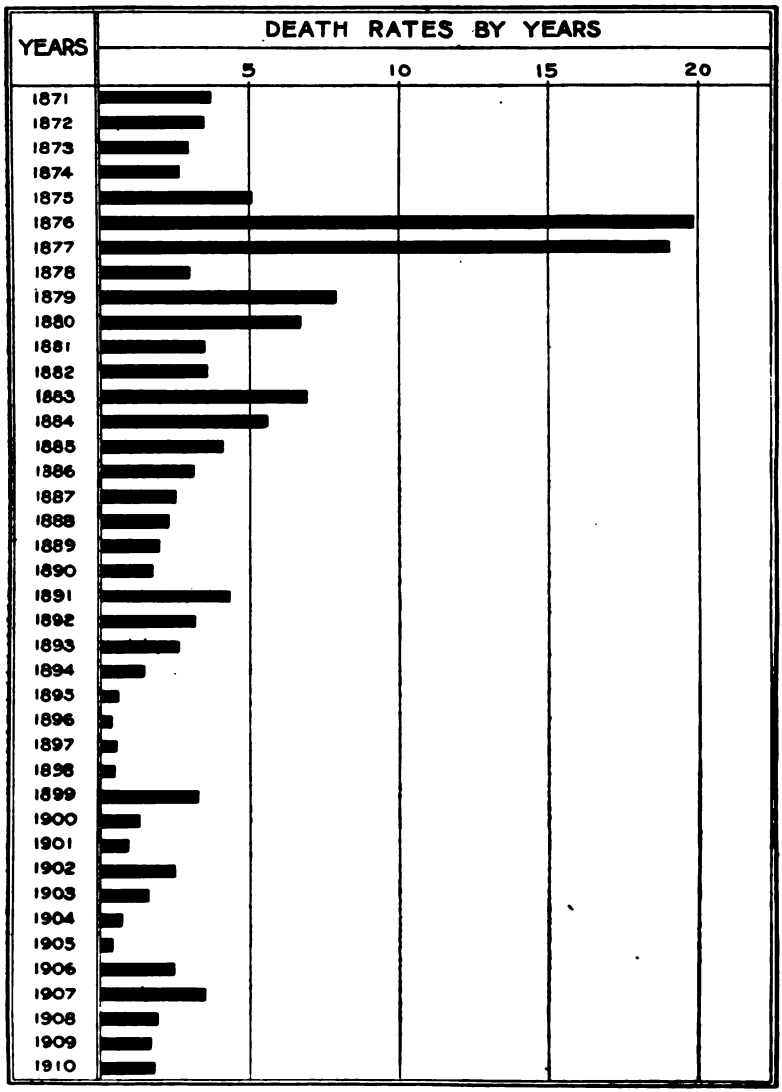
SCARLET FEVER.

DEATHS PER 10,000 OF POPULATION.

Average death rates of the stated decades.





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SCARLET FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10,000 of population—Averages by decades, 1871-1910.

YEARS	MONTHS												SCARLET FEVER MORTALITY	
	January	February	March	April	May	June	July	August	September	October	November	December	Total	Percentages of total mortality	Per 10,000 of population
1871	14	9	9	7	11	7	9	....	....	16	17	25	124	1.78	3.71
1872	18	13	11	13	12	6	9	8	4	8	5	21	128	1.26	3.48
1873	14	7	14	13	11	11	15	8	10	4	4	4	115	1.20	3.03
1874	7	2	4	5	6	14	12	11	16	6	12	10	105	1.31	2.66
1875	14	7	12	17	21	15	11	11	20	17	17	44	206	2.61	5.14
1876	....	....	....	....	....	....	....	....	....	....	....	....	811	9.46	19.89
1877	153	114	92	74	82	83	57	44	37	29	31	23	819	10.20	19.05
1878	16	11	7	8	11	6	2	13	11	15	14	19	133	1.79	3.05
1879	20	16	31	30	32	16	31	35	33	41	61	43	389	4.52	7.91
1880	50	37	28	26	27	30	27	30	32	24	13	15	339	3.24	6.74
1881	25	22	7	23	22	15	19	14	8	8	12	12	187	1.33	3.46
1882	30	18	11	14	12	11	2	14	4	18	37	29	200	1.51	3.57
1883	39	22	35	36	35	30	31	36	36	30	23	47	400	3.46	6.90
1884	42	26	13	18	19	23	22	48	36	39	34	34	354	2.48	5.62
1885	42	18	15	27	20	23	12	13	20	27	35	27	279	2.24	4.11
1886	22	29	19	20	19	25	13	21	6	15	14	17	220	1.61	3.13
1887	23	23	20	13	8	18	15	23	19	7	14	7	190	1.23	2.50
1888	16	15	10	14	20	16	18	6	17	18	14	20	184	1.17	2.29
1889	22	12	17	24	15	16	14	12	13	13	11	16	185	1.09	1.98
1890	17	19	38	12	15	15	7	9	14	11	13	23	193	0.88	1.75
1891	40	58	62	39	39	30	21	26	34	43	50	57	499	1.80	4.34
1892	64	46	42	42	35	22	18	17	18	21	27	30	382	1.46	3.18
1893	47	35	47	42	25	18	22	9	17	21	24	22	329	1.21	2.63
1894	30	23	16	18	13	16	17	19	5	8	10	15	190	0.80	1.45
1895	15	11	2	9	7	5	4	8	7	1	3	5	77	0.32	0.56
1896	8	3	5	2	5	2	5	3	5	4	5	7	54	0.23	0.38
1897	8	5	10	13	10	2	5	4	5	6	7	6	81	0.37	0.54
1898	4	4	10	5	8	6	3	3	....	6	8	10	67	0.29	0.43
1899	26	41	68	71	68	43	20	28	31	35	53	49	533	2.09	3.28
1900	48	47	21	19	26	18	10	2	4	13	6	12	226	0.91	1.33
1901	11	11	14	18	21	12	11	7	8	8	19	25	165	0.68	0.94
1902	48	58	44	74	62	33	24	22	15	19	20	26	445	1.68	2.47
1903	40	33	30	32	42	38	23	10	5	11	16	16	296	1.02	1.60
1904	15	26	18	24	13	8	5	10	2	3	8	11	143	0.54	0.75
1905	8	7	7	4	5	7	9	3	2	5	6	16	79	0.29	0.41
1906	27	33	44	56	61	58	38	24	24	26	51	51	493	1.70	2.47
1907	96	144	88	58	60	24	43	43	39	20	46	57	718	2.23	3.51
1908	61	42	36	22	33	14	17	20	30	37	49	49	410	1.35	1.96
1909	53	32	39	27	31	23	22	17	18	24	42	41	369	1.18	1.72
1910	40	33	38	34	64	34	23	18	17	20	30	53	404	1.20	1.84

AVERAGES BY DECADES, 1871-1910.

1871-80	34	24	23	21	24	21	19	20	20	18	19	23	317	3.74	7.47
1881-90	28	20	18	20	19	19	15	20	17	19	21	23	239	1.70	3.53
1891-00	29	27	28	26	24	16	13	12	13	16	19	21	244	0.94	1.81
1901-10	40	42	36	35	39	25	21	17	16	17	29	35	352	1.19	1.77

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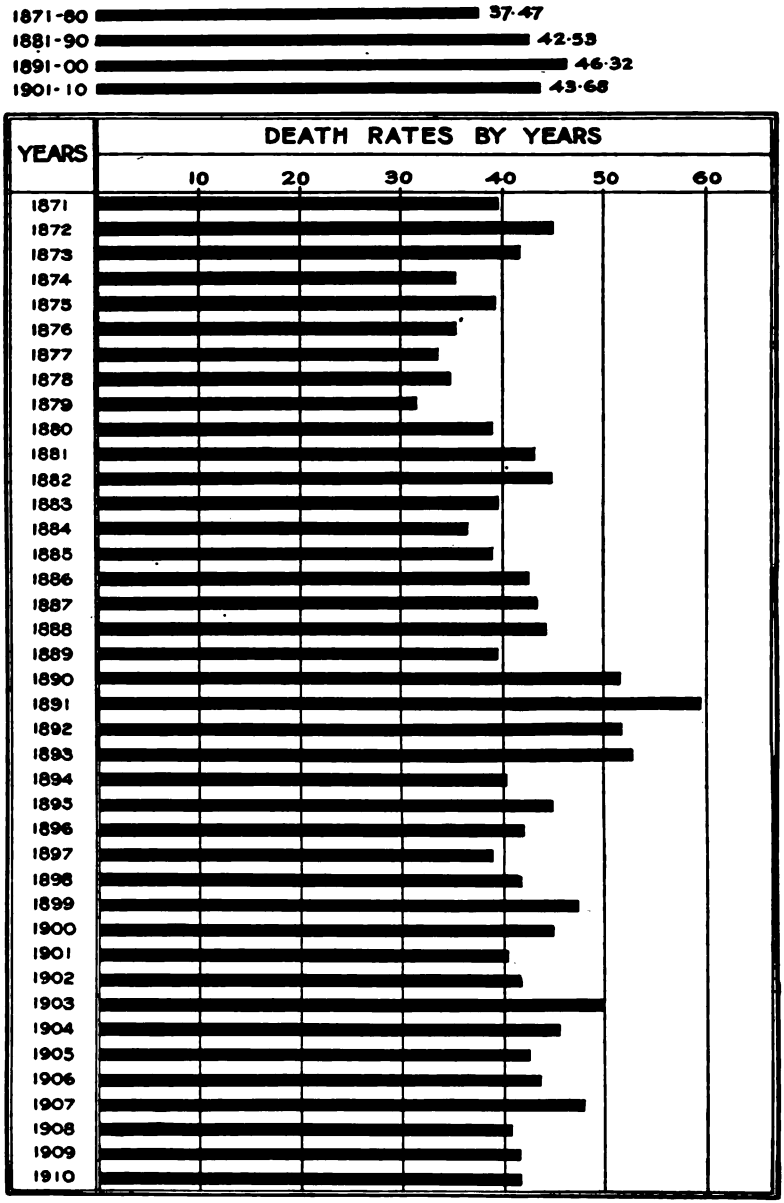
IMPURE AIR DISEASES.

(TUBERCULOSIS, PNEUMONIA, BRONCHITIS, INFLUENZA.)

DEATHS PER 10,000 OF POPULATION.

Average death rates for stated decades.



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THE IMPURE-AIR DISEASES.

A summary of the deaths, death rates and ratios to total mortality of a group of diseases commonly called "The Impure-Air Diseases," with averages by decades, 1871-1910.

YEARS	TUBERCULOSIS		PNEUMONIA		BRONCHITIS		INFLUENZA		TOTAL IMPURE-AIR DISEASES		
	Deaths	Rate per 10,000 of Population	Deaths	Rate per 10,000 of Population	Deaths	Rate per 10,000 of Population	Deaths	Rate per 10,000 of Population	Deaths	Rate per 10,000 of Population	Per Cent of Total Deaths
1871	829	24 80	386	11.55	104	3.11	.....	.....	1319	39.46	18.9
1872	1009	27.46	462	12.57	178	4.84	2	0.05	1651	44 93	16.3
1873	930	24.47	435	11.45	215	5.66	2	0.05	1582	41.63	16.6
1874	864	21 85	377	9.53	154	3.89	3	0.08	1398	35.35	17.4
1875	880	21.97	493	12.31	195	4.87	3	0.07	1571	39.23	19.9
1876	886	21.73	364	8.93	189	4.64	.....	.....	1439	35.30	16.8
1877	913	21.23	345	8.02	182	4.23	.....	.....	1440	33.49	17.9
1878	856	19.60	377	8.63	289	6.62	.....	.....	1522	34 85	20.5
1879	854	17.37	460	9.36	232	4.72	.....	.....	1546	31.45	17.9
1880	981	19.60	633	12.58	348	6.92	1	0.02	1963	39.01	18.8
1881	1191	22.06	707	13.09	432	8.00	.....	.....	2330	43 15	16.5
1882	1183	21.10	829	14.79	502	8.95	.....	.....	2514	44.84	19.0
1883	1150	19.83	694	11.97	443	7.64	.....	.....	2287	39 43	19.8
1884	1185	18.81	713	11.32	549	8.72	.....	.....	2447	38.84	19.6
1885	1289	19.38	736	11.07	557	8.38	.....	.....	2582	38 83	20.7
1886	1377	19 57	880	12.51	730	10.37	.....	.....	2987	42.45	21.8
1887	1540	20 26	1008	13.26	754	9.92	.....	.....	3302	43.45	21.4
1888	1616	20.13	1105	13.77	823	10.25	.....	.....	3544	44.15	22.5
1889	1602	18.10	1169	12.50	816	8 73	1	0.01	3678	39 34	21.7
1890	2221	20.19	2073	18.85	1189	10.81	112	1.02	5595	50.87	25.6
1891	2400	20.89	2898	25.18	1495	13 01	20	0 17	6813	59.31	24 5
1892	2383	19.86	2397	19.98	1303	10.86	103	0.86	6186	51.56	23.6
1893	2647	21.12	2457	19.61	1395	11.14	88	0.70	6587	52 57	24.3
1894	2499	19.10	1520	11.61	1185	9.05	51	0.39	5255	40.15	22.0
1895	2468	18.02	2359	17 26	1133	8.29	165	1.21	6120	44.78	25.3
1896	2667	18.68	2141	15.00	1165	8.16	17	0.12	5990	41.96	25.8
1897	2574	17.26	2152	14.43	1026	6.88	15	0.10	5767	38 68	26.4
1898	2829	18.17	2477	15.91	995	6.39	281	1.80	6582	42.27	28.9
1899	2910	17.89	3438	21.14	1014	6.23	311	1.91	7673	47.18	30 1
1900	2953	17.39	3389	19.96	1105	6.51	160	0.94	7607	44.78	30.5
1901	2874	16.40	3127	17.85	866	4.94	201	1.15	7068	40.34	29.0
1902	2979	16.54	3433	19.06	978	5.43	118	0.66	7508	41.68	28.4
1903	3377	18.25	4629	25.01	1005	5.43	166	0.90	9177	49.59	31.7
1904	3543	18.65	4138	21.78	836	4.40	114	0.60	8631	45.43	33 8
1905	3674	18.88	3582	18.41	848	4.35	153	0.79	8257	42 43	30.3
1906	3837	19.20	4047	20.25	726	3.63	119	0.60	8729	43.68	30.1
1907	4039	19.72	4753	23.21	787	3.84	238	1.16	9817	47.94	30.5
1908	3915	18.67	3511	16.74	789	3 76	334	1 59	8549	40.76	28.1
1909	3885	18.10	4713	21.96	147	0.68	186	0.87	8931	41.61	28.5
1910	3908	17.80	5286	24.08	171	0.78	146	0.66	9511	43.32	28.6

AVERAGES BY DECADES, 1871-1910.

1871-1880	900	22.00	433	10.49	209	4.95	1	0.03	1543	37.47	18.1
1881-1890	1444	19.94	991	13.31	680	9.18	11	0.10	3126	42.53	20.9
1891-1900	2632	18.84	2523	18 01	1182	8.65	121	0.82	6458	46.32	26.14
1901-1910	3603	18.22	4122	20.84	715	3.72	178	0.90	8618	43.68	29.8

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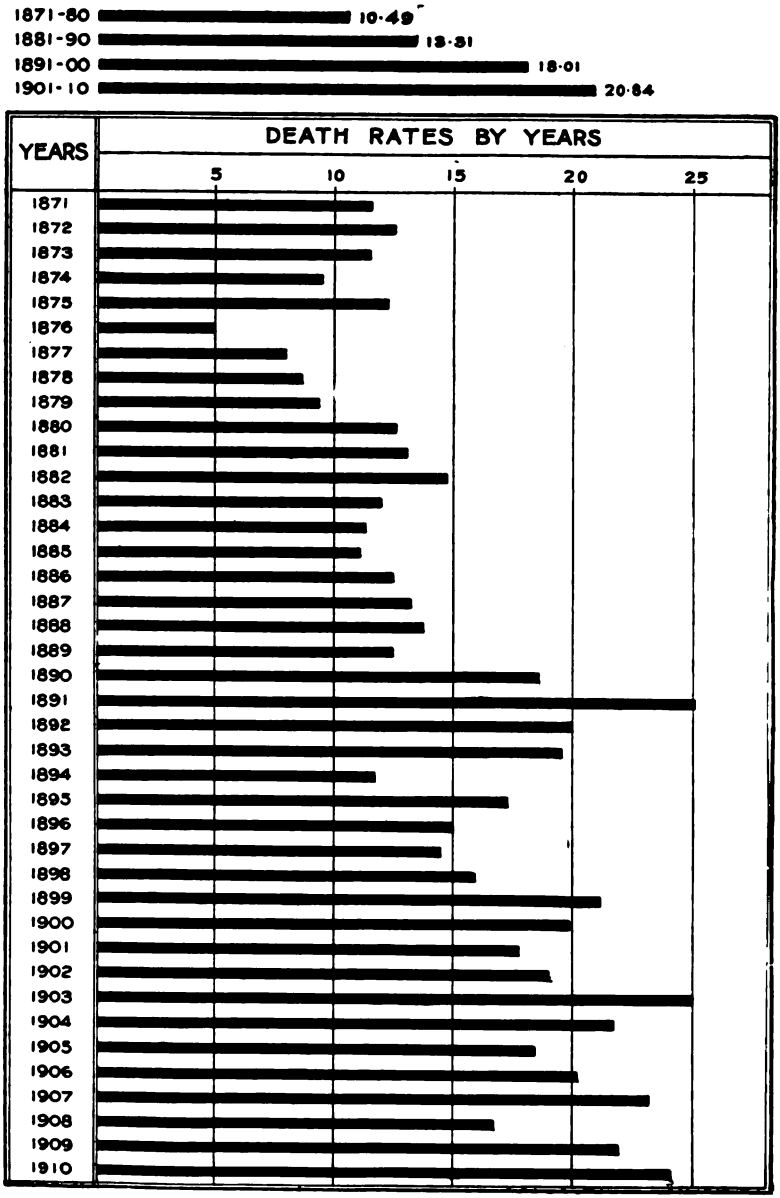
PNEUMONIA.

DEATHS PER 10,000 OF POPULATION.

Average death rates of the stated decades.



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BRIGHT'S DISEASE—HEART DISEASES—CANCER.

Deaths as reported by years—Percentages of the mortality from all causes—Death rates per 10,000 of population—Averages by decades, 1871–1910.

YEARS	BRIGHT'S DISEASE (Nephritis)			HEART DISEASE			CANCER		
	Deaths	Per Cent of Total Mortality	Per 10,000 of Population	Deaths	Per Cent of Total Mortality	Per 10 000 of Population	Deaths	Per Cent of Total Mortality	Per 10,000 of Population
1871	28	0.4	0 84	133	1.9	3.98	68	1.0	2.03
1872	54	0.5	1.47	169	1.7	4.60	75	0.7	2.04
1873	52	0.5	1 37	179	1.9	4.71	107	1.1	2.82
1874	50	0.6	1.26	189	2.4	4.78	109	1.4	2.76
1875	56	0.7	1.40	213	2.7	5.32	122	1.5	3.05
1876	84	1 0	2.06	189	2.2	4.64	122	1.4	2.99
1877	81	1.0	1.88	183	2.3	4.26	130	1.6	3.02
1878	97	1.3	2.22	302	4.1	6.92	177	2.4	4.05
1879	131	1.5	2.67	354	4.1	7.20	177	2 1	3.60
1880	179	1.7	3.56	308	2.9	6.02	163	1.6	3.24
1881	161	1.1	2.98	335	2.4	6.20	217	1.5	4.02
1882	184	1.4	3.28	374	2.9	6.67	230	1.7	3.92
1883	223	1.9	3.84	421	3.6	7.26	232	2.0	4.00
1884	233	1.9	3.70	388	3.1	6 16	265	2.1	4.21
1885	235	1.9	3.53	460	3.7	6.92	249	2.0	3 74
1886	300	2.2	4.26	453	3.3	6.44	230	1.7	3.27
1887	330	2.1	4.21	549	3.6	7.22	301	2.0	3.96
1888	330	2.1	4.11	619	3.9	7.71	361	2.3	4.50
1889	373	2.2	3.99	664	3 9	7.10	379	2.2	4.05
1890	509	2.3	4.63	816	3.7	7.42	461	2.1	4.19
1891	594	2.1	5.17	927	3.4	8.09	545	2.0	4.74
1892	610	2.3	5.08	1058	4.0	8.82	539	2.1	4.49
1893	753	2.8	6.01	1106	4.1	8.83	609	2.3	4.86
1894	660	2.9	5.20	1088	4.3	7.93	639	2.4	4.88
1895	701	2.9	5.13	1364	5.6	9.98	682	2.8	4.99
1896	818	3.5	5.73	1289	5 5	9.03	734	3.2	5.14
1897	987	4.3	6.28	1365	6 3	9.16	742	3 4	4 98
1898	1051	4 6	6.75	1399	6.1	8.98	791	3.5	5.08
1899	1180	4.6	7.26	1492	5.9	9.17	890	3.5	5.47
1900	1117	4.5	6.57	1893	7.6	11.14	954	3.8	5.62
1901	1016	4.2	5.79	1947	8.0	11.11	1003	4.1	5.72
1902	1258	4.8	6.98	2098	8.0	11.65	1074	4.1	5.96
1903	1516	5.2	8.19	2092	7.2	11.30	1063	3.7	5.74
1904	1848	7.0	9.73	2043	7.8	10.75	1124	4 3	5.92
1905	2017	7.4	10.35	2110	7.8	10 83	1191	4.4	6.11
1906	2128	7.3	10.65	2195	7.6	10.98	1328	4.6	6.65
1907	2496	7.8	12.19	2317	7.2	11.32	1538	4.8	7.51
1908	2138	7.0	10 20	2686	8.8	12,81	1571	5.2	7.49
1909	2273	7.3	10.59	3163	10.1	14.74	1646	5.3	7 67
1910	2500	7.5	11.39	3323	10.0	15.14	1804	5.4	8.23
AVERAGES BY DECADES, 1871–1910.									
1871–1880	81	0.9	1.87	221	2.6	5.24	125	1.5	2.96
1881–1890	287	1.9	3.85	508	3.4	6.91	292	2.0	3 99
1891–1900	844	3.5	5.92	1293	5.3	9.11	712	2.9	5.03
1901–1910	1919	6.6	9.61	2397	8.2	12.06	1334	4.6	6.70

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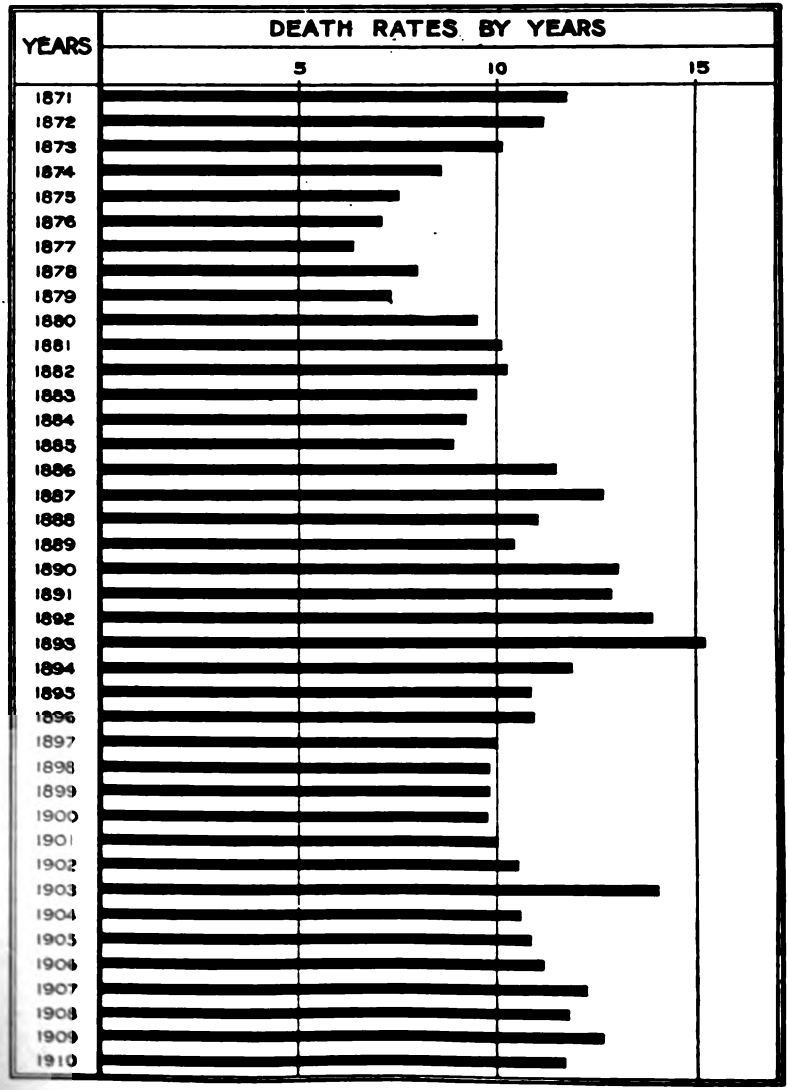
VIOLENCE.

(ALL FORMS.)

DEATHS PER 10,000 OF POPULATION.

Average death rates for stated decades.



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VIOLENCE.

Deaths as reported by years — Percentages of the total mortality from all causes — Death rates per 10,000 of population,— Ratio of the various forms of violence to total violence — Averages by decades — For the years 1871 to 1910.

YEARS	ALL VIOLENCE			ACCIDENTS							SUICIDE			MANSLAUGHTER				
	Total Deaths from All Forms of Violence	Percentages of Total Mortality from All Causes	Death Rates per 10,000 of Population	Railway Accidents	Street Car Accidents	Sunstroke	Other Accidents	Total Accidental Deaths	Percentages of Accidental Deaths of Total Violence	Death Rates per 10,000 of Population	Total Deaths from Suicide	Percentages of Suicide to Total Violence	Death Rates per 10,000 of Population	Homicide	Legal Execution	Total Manslaughter	Percentages of Deaths from Manslaughter of Total Violence	Death Rates per 10,000 of Population
1871....	391	5.60	11.70	36	....	1	311	348	89.0	10.41	30	7.7	0 90	13	....	13	3.3	0.39
1872....	410	4.04	11.16	60	....	5	295	360	87.8	9.80	39	9.5	1.06	11	....	11	2.7	0.30
1873....	385	4.03	10.13	78	5	4	224	311	80.8	8.18	55	14.3	1.45	19	....	19	4.9	0.50
1874....	340	4.24	8.60	43	5	11	220	279	82.1	7.06	53	15.6	1.34	8	....	8	2.4	0.20
1875....	301	3.81	7.52	48	3	2	182	235	78.1	5.87	51	16.9	1.27	15	....	15	5.0	0.37
1876....	289	3.37	7.09	36	6	3	188	233	80.6	5.72	41	14.2	1.01	15	....	15	5.2	0.37
1877....	274	3.41	6.37	43	2	1	161	207	75.5	4.81	55	20.1	1.28	12	....	12	4.4	0.28
1878....	348	4.69	7.97	51	....	47	185	283	81.3	6.48	52	14.9	1.19	11	2	13	3.7	0.30
1879....	359	4.17	7.30	68	....	4	217	289	80.5	5.88	56	15.6	1.14	14	....	14	3.9	0.28
1880....	479	4.58	9.52	93	7	31	258	389	81.2	7.73	63	13.2	1.25	27	....	27	5.6	0.54
1881....	548	3.89	10.14	116	6	33	294	449	81.9	8.31	77	14.1	1.43	22	....	22	4.0	0.41
1882....	575	4.34	10.26	103	9	6	333	451	78.4	8.04	88	15.3	1.57	35	1	36	6.3	0.64
1883....	548	4.74	9.45	97	10	10	332	449	81.9	7.74	82	15.0	1.41	17	....	17	3.1	0.29
1884....	581	4.66	9.22	101	11	9	340	461	79.3	7.32	93	16.0	1.48	26	1	27	4.6	0.43
1885....	590	4.73	8.87	91	10	9	343	453	76.8	6.81	98	16.6	1.47	36	3	39	6.6	0.59
1886....	811	5.92	11.52	138	14	6	482	640	78.9	9.09	119	14.7	1.69	51	1	52	6.4	0.74
1887....	964	6.26	12.68	142	12	213	433	800	83.0	10.53	112	11.6	1.47	48	4	52	5.4	0 68
1888....	887	5.62	11.05	192	21	19	437	669	75.4	8.33	152	17.1	1.89	65	1	66	7.4	0.82
1889....	976	5.76	10.44	217	18	7	507	749	76.7	8.01	182	18.6	1.95	45	....	45	4.6	0.48
1890....	1434	6.56	13.04	264	35	152	700	1151	80.3	10.47	206	14.4	1.87	77	....	77	5.4	0.70
1891....	1480	5.33	12.88	301	34	23	823	1181	79.8	10.28	246	16.6	2.14	53	....	53	3.6	0.46
1892....	1660	6.33	13.84	355	39	87	854	1335	80.4	11.13	244	14.7	2.03	81	....	81	4.9	0.68
1893....	1901	7.02	15.17	387	75	22	960	1444	76.0	11.52	353	18.6	2.82	104	....	104	5.5	0.83
1894....	1549	6.48	11.84	256	45	12	880	1193	77.0	9.12	294	19.0	2.25	61	1	62	4.0	0.47
1895....	1480	6.11	10.83	222	52	22	752	1048	70.8	7.67	350	23.6	2.56	81	1	82	5.5	0.60
1896....	1552	6.67	10.87	198	66	185	699	1148	74.0	8.04	331	21.3	2.32	69	4	73	4.7	0.51
1897....	1487	6.82	9.97	186	58	72	699	1015	68.3	6.81	384	25.8	2.58	85	3	88	5.9	0.59
1898....	1516	6.65	9.74	221	62	39	767	1089	71.8	6.99	347	22.9	2.23	77	3	80	5.3	0.51
1899....	1585	6.21	9.75	228	43	31	795	1097	69.2	6.75	377	23.8	2.32	108	3	111	7.0	0.68
1900....	1652	6.62	9.73	258	73	75	788	1194	72.3	7.03	356	21.5	2.10	102	....	102	6.2	0.60
1901....	1750	7.17	9.99	241	85	76	856	1258	71.9	7.18	399	22.8	2.28	92	1	93	5.3	0.53
1902....	1889	7.14	10.49	287	73	9	972	1341	71.0	7.44	439	23.3	2.44	108	1	109	5.8	0.61
1903....	2588	8.95	13.99	316	119	41	1488	1964	75.9	10.61	482	18.6	2.60	142	....	142	5.5	0.77
1904....	2014	7.65	10.60	324	125	24	983	1456	72.3	7.66	423	21.0	2.23	130	5	135	6.7	0.71
1905....	2107	7.74	10.83	319	147	39	986	1491	70.8	7.66	430	20.4	2.21	185	1	186	8.8	0.96
1906....	2230	7.68	11.16	309	167	58	1129	1663	74.5	8.32	400	17.9	2.00	162	5	167	7.5	0.84
1907....	2491	7.74	12.16	316	197	9	1357	1879	75.4	9.18	407	16.3	1.99	205	1	206	8.3	1.01
1908....	2476	8.15	11.81	228	171	39	1337	1775	71.7	8.46	494	19.9	2.36	207	....	207	8.4	0.99
1909....	2716	8.68	12.65	278	190	24	1543	2035	74.9	9.48	454	16.7	2.12	227	....	227	8.4	1.06
1910....	2552	7.68	11.62	*	*	28	1865	1893	74.2	8.62	458	17.9	2.09	201	....	201	7.9	0.92

AVERAGES BY DECADES.

1871-80.	358	4.19	8.74	55	3	11	224	293	81.7	7.19	50	14.2	1.19	15	0.2	15	4.1	0.35
1881-90.	791	5.25	9.77	146	15	46	420	627	79.3	8.47	121	15 3	1.62	42	1.1	43	5.4	0.58
1891-00.	1586	6.42	11.46	261	55	57	801	1174	74.0	8.53	328	20.8	2.34	82	1.5	84	5.2	0.59
1901-10.	2281	7.86	11.53	291	142	35	1252	1675	73.3	8.46	439	19.5	2.23	166	1.4	167	7.2	0.84

* Data not obtainable but included in "other accidents"

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METEOROLOGIC DATA

CHICAGO

1871-1910

HENRY J. COX
Professor, U. S. Weather Bureau

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ANNUAL SUMMARY OF METEOROLOGIC DATA FOR CHICAGO: 1907.

HENRY J. COX, PROFESSOR, U. S. WEATHER BUREAU.

MONTH	TEMPERATURE							MOISTURE							WIND				NUMBER OF DAYS													
	MEAN			EXTREMES					PRECIPITATION							MAXIMUM													MAXIMUM TEMPERATURE		
	Maximum	Minimum	Monthly	Maximum	Date	Minimum	Date	Relative Humidity	Total	Maximum in 24 hours	Date	Snowfall	Percentage of Sunshine	Average Cloudiness	Average Hourly Velocity	Prevailing Direction	Velocity	Direction	Date	Gales	Clear	Partly Cloudy	Cloudy	Precipitation	Thunderstorms	Fog	Snow	Hail	Auroras	Below 32°	Above 90°	Minimum Temperature Below 32°
	°	°	°	°		°		%	In.	In.		In.	%	a			b			c				d		e	f					
January	34	21	28	59	7	−3	26	86	4.21	1.80	18-19	10.9	32	7.6	14	nw	60	w	20	3	6	5	20	19	2	1	13	0	0	13	0	24
February	33	19	26	53	13	−2	4	77	1.00	0.70	4-5	10.0	58	5.7	15	nw	50	nw	2	2	6	14	8	5	0	2	5	0	0	10	0	24
March	51	34	43	80	23	23	3	78	2.94	0.95	27-28	2.1	53	6.5	16	ne	48	w	29	3	3	15	13	12	5	1	4	1	0	0	0	14
April	46	34	40	70	24	23	14	72	2.37	1.31	29-30	1.9	43	6.6	17	nw	48	sw	24	4	7	8	15	13	3	1	4	0	0	0	0	11
May	59	44	52	83	13	34	3	73	3.50	1.74	22-23	1.3	55	6.0	15	ne	40	sw	12	1	10	9	12	9	5	0	1	1	0	0	0	0
June	73	59	66	91	17	47	1	74	3.64	1.19	4-5	0	61	4.9	14	sw	42	w	22	2	12	11	7	11	7	0	0	1	0	0	1	0
July	80	67	73	90	21	55	3	73	3.15	1.47	10-11	0	62	5.8	12	sw	43	w	25	2	3	19	9	13	7	0	0	0	0	0	1	0
August	77	65	71	92	11	54	2	73	4.22	1.28	15-16	0	67	4.6	12	ne	44	sw	6	3	11	15	5	9	7	2	0	1	0	0	1	0
September	71	58	65	92	1	39	25	75	4.49	1.80	17-18	0	53	6.1	13	sw	40	nw	24	1	7	11	12	11	5	0	0	0	0	0	1	0
October	59	46	53	81	2	35	28	77	0.93	0.64	3	0	59	5.3	15	sw	41	w	9	1	10	10	11	8	2	0	0	0	0	0	0	0
November	47	35	41	56	27	25	14	71	1.92	0.99	20	3.0	61	4.6	15	nw	52	sw	20	2	12	10	8	4	0	1	1	0	0	0	0	8
December	38	28	33	58	27 †Aug	19	31 Jan	82	2.73	0.99	13-14 *Jan	12.8	29	7.4	16	sw	42	ne	14 Jan	1	6	3	22	13	0	2	9	0	0	6	0	26
Year	55.7	42.5	49.2	92	11	−3	26	76	35.10	1.80	18-19	42.0	52.8	5.9	14.5	sw	60	w	20	25	93	130	142	127	43	10	37	4	0	29	4	107

NOTES.—*a*, Tenths of clouded sky. *b*, For five minutes. *c*, 40 mile velocity or over. *d*, .01 inch or over. *e*, For one hour or more. *f*, 0.1 inch or over.
† Also September 1; * also September 17-18.

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MISCELLANEOUS METEOROLOGIC DATA FOR 1907.

BAROMETRIC PRESSURE; SEA LEVEL.

Mean: 30.04 inches. Highest: 30.71 inches, January 22nd. Lowest: 29.18 inches, January 19th.

DATES OF

To July 1st—

Greatest depth of snow on ground, and amount: February 5th, 8.2 inches.

Greatest snowfall in 24 hours, and amount: February 5th, 7.0 inches.

Last occurrence of zero temperature: February 4th.

Last killing frost: May 4th.

Last light frost: May 28th.

First thunderstorm: January 7th.

After July 1st—

Last thunderstorm: October 7th.

First light frost: September 25th.

First killing frost: October 14th.

First occurrence of zero temperature: did not occur.

Greatest depth of snow on ground, and amount: December 14th, 8.0 inches.

Greatest snowfall in 24 hours, and amount: December 13th-14th, 8.1 inches.

Longest period without precipitation: 8 days, from April 16th to April 23rd; November 12th to 19th; November 22nd to 29th inclusive.

Longest period with precipitation: 6 days, from January 14th to January 19th inclusive.

The mean temperature of the year as a whole, and the mean temperatures of February, June, July, August, September and October, differed from their respective normals by not more than one degree, while November and December were slightly warmer than the average. January was much warmer than usual, and March was phenomenally warm, exceeding in temperature even the mean temperature of the following April. The contrast between the warm weather of March and the cool period during April and May was quite marked; in fact, the average temperature of April and May combined was the lowest for that period in the history of the station.

The amount of precipitation was 1.70 inches greater than the average, and with the exception of February and October was quite evenly distributed thruout the year. The total depth of snow, 42 inches, was 5.7 inches more than the average, the greatest excess of snowfall occurring in May and December. March was deficient in snowfall because of its excessively high temperature.

The cloudiness was more marked than usual, except during February, March and November. As compared with their normals, April was the cloudiest and November the sunniest, the departures being — 20 per cent. and + 16 per cent. respectively. The percentage of possible sunshine for the entire year, 52.8, was 5.2 per cent. below the normal.

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ANNUAL SUMMARY OF METEOROLOGIC DATA FOR CHICAGO: 1908.

HENRY J. COX, PROFESSOR, U. S. WEATHER BUREAU.

MONTH	TEMPERATURE (Degrees Fahrenheit)							MOISTURE					SUNSHINE (Percentage of Possible)	AVERAGE CLOUDINESS (Scale, 0-10)	WIND					NUMBER OF DAYS															
	MEAN			EXTREMES				RELATIVE HUMIDITY (Percentage)	PRECIPITATION (In. and hundredths)						AVERAGE HOURLY VELOCITY	PREVAILING DIRECTION	MAXIMUM (For five min.)			GALES (40 miles per hour or over)	CLEAR	PARTLY CLOUDY	CLOUDY	PRECIPITATION (0.01 in. or over)	THUNDERSTORMS	DENSE FOG (for one hour or more)	SNOW (0.01 in. or more melted snow)	MAX. TEMP.		MIN. TEMP.			
	Maximum	Minimum	Monthly	Maximum	Date	Minimum	Date		Total	Maximum in 24 Hours	Date	Snowfall (In. and Tenths)					Velocity	Direction	Date								32° Degrees or Below	90° Degrees or Above	32° Degrees or Below	Zero or Below		
January	35	22	29	49	21	0	29	80	2.05	1.22	12	13.2	56	5.2	17	sw	44	nw	26	2	11	10	10	7	0	0	6	10	0	28	1			
February	32	21	27	50	12	−2	2	79	3.72	1.27	18-19	19.8	36	6.9	18	nw	54	w	5	8	7	5	17	11	1	0	9	16	0	24	1			
March	48	33	41	71	26	21	9	74	3.48	1.32	26-27	0.1	48	6.3	16	sw	54	w	6	3	8	7	16	11	5	1	0	0	0	15	0			
April	57	41	49	76	22	24	2	74	2.81	0.80	6-7	T.	61	5.6	17	sw	52	w	25	5	8	8	14	14	3	1	0	0	0	3	0			
May	66	51	59	87	25	34	2	81	6.74	1.90	28-29	0	50	6.2	15	w	68	w	28	4	8	11	12	14	7	2	0	0	0	0	0			
June	76	61	68	93	22	47	11	71	1.40	0.56	13-14	0	79	3.9	14	sw	45	sw	8	2	12	14	4	7	7	0	0	0	2	0	0			
July	80	68	74	96	11	60	8	75	1 45	0.52	16-17	0	77	4.5	12	sw	41	sw	6	1	9	1	4	9	8	0	0	0	3	0	0			
August	80	67	73	96	3	58	23	67	6.35	4.34	11-12	0	82	3.6	12	ne	49	sw	12	3	17	11	3	8	5	0	0	0	4	0	0			
September	78	63	71	92	11	36	29	74	2.09	1.33	27-28	0	85	2.8	13	sw	39	w	30	0	21	6	3	7	3	1	0	0	4	0	0			
October	62	48	55	82	21	34	31	73	0.81	0.36	23-24	0	70	4.4	14	sw	36	sw	16	0	14	10	7	6	0	1	0	0	0	0	0			
November	50	36	44	66	23	25	14	80	2.67	1.06	25	0.9	59	5.5	16	w	46	w	26	4	9	10	11	8	2	0	2	1	0	9	0			
December	38	25	31	53	29	10	8	75	1.18	0.65	16-17	2.7	43	6.3	16	w	52	w	30	1	9	6	16	7	0	0	2	6	0	25	0			
Year	58.7	44.7	51.7	96	Aug. 3	−2	Feb. 2	75	34 82	4.34	Aug. 11-12	36.7	62.0	5.1	15	sw	68	w	May 28	33	133	116	117	108	41	6	19	33	13	104	2			

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MISCELLANEOUS METEREOLOGIC DATA FOR 1908.

BAROMETRIC PRESSURE; SEA LEVEL.

Mean: 30.03 inches: Highest: 30.75 inches, February 8; Lowest: 29.22 inches, April 25.

TEMPERATURE.

Greatest daily range: 71 degrees to 35 degrees, inclusive, 36 degrees on March 26. Least daily range: 36 degrees to 33 degrees, inclusive, 3 degrees, on February 14.
Greatest monthly range: 56 degrees in September. Least monthly range 36 degrees in July.
Highest mean of three consecutive days: 84 degrees, August 3 to 5.
Lowest mean of three consecutive days: 14 degrees, January 28 to 30.

PRECIPITATION.

Longest period without precipitation: 18 days, from July 22 to August 8, inclusive.
Longest period with precipitation: 7 days, from April 22 to 28, and from May 25 to 31, inclusive.

HAIL.

March 27, April 27, May 28.

MISCELLANEOUS DATES.

To June 30,—

Greatest depth of snow on ground, and amount, February 19, 13.5 inches.
Greatest snowfall in 24 hours, and amount: February 18-19, 12.6 inches.
Last occurrence of zero temperature: February 2.
Last killing frost: April 3.
Last light frost: May 2.
First thunderstorm: February 29.

After June 30,—

Last thunderstorm: November 25.
First light frost: September 29.
First killing frost: October 12.
First occurrence of zero temperature: did not occur.
Greatest depth of snow on ground, and amount: December 6, 1.8 inches.
Greatest snowfall in 24 hours, and amount: December 6, 2.3 inches.

GENERAL SUMMARY.

Chief among the notable features of the year 1908, were its abnormal warmth, its deficiency of rainfall during the growing season, and its abundance of sunshine thruout the last seven months. During no other year in the history of the station were the monthly mean temperatures uniformly above the normals. Each month of 1908 was 2 degrees or more above its normal, January, March, September and November having departures of + 5, + 7, + 6 and + 5 degrees, respectively.

The severe drought which set in early in June lasted until well into November, with only temporary breaks. The excess of rainfall in August was due chiefly to three storms from the 11th to 17th, inclusive, when 5.83 inches fell—4.34 inches of this amount being within the space of 24 hours on the 11th and 12th. (See Climatological Report, Illinois Section for September, 1908.)

In January, and from June to December, inclusive, the sunshine was greatly above the normal, only July and December of these months having less than 10 per cent. excess over the normal. February and May were the cloudy months of the year, having 16 and 13 per cent., respectively, less than the normal amount of sunshine.

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ANNUAL SUMMARY OF METEOROLOGIC DATA FOR CHICAGO: 1909.

HENRY J. COX, PROFESSOR, U. S. WEATHER BUREAU.

MONTH	TEMPERATURE (Degrees Fahrenheit)							MOISTURE					SUNSHINE	SKY COVER	WIND			NUMBER OF DAYS														
	MEAN			EXTREMES					PRECIPITATION (In. and hundredths)																				MAX. TEMP.		MIN. TEMP.	
	Maximum	Minimum	Monthly	Maximum	Date	Minimum	Date	Relative Humidity (Percentage)	Total	Maximum in 24 hours	Date	Snowfall (In. and tenths)	Sunshine (Percentage of possible)	Average Cloudiness (Scale, 0-10)	Average Hourly Velocity	Prevailing Direction	MAXIMUM (For five min.) Velocity	MAXIMUM (For five min.) Direction	MAXIMUM (For five min.) Date	Gales (40 miles per hour or over)	Clear	Partly Cloudy	Cloudy	Precipitation (0.01 in. or over)	Thunderstorms	Dense Fog (for one hour or more)	Snow (0.01 inch or more melted snow)	32° Degrees or Below	90° Degrees or Above	32° Degrees or Below	Zero or Below
January	35	22	29	65	23	−10	6	81	1.96	0.86	28-29	8.6	33	7.7	13	sw	48	nw	29	3	4	5	22	8	2	0	6	11	0	22	2
February	39	26	32	57	4	12	25	80	3.84	0.96	8-9	10.1	30	7.8	17	sw	48	ne	14	4	4	3	21	11	1	1	7	6	0	20	0
March	41	30	36	55	26	14	17	74	1.63	0.43	8	3.8	40	6.7	15	nw	38	w	16	0	6	8	17	8	0	0	5	2	0	19	0
April	52	38	45	74	5	25	10	74	7.73	2.75	29	0.3	46	6.6	17	se	60	w	7	9	3	14	13	16	5	1	2	0	0	3	0
May	63	49	56	86	5	32	1	74	2.18	0.91	25-26	T.	68	4.8	16	ne	50	sw	15	6	13	11	7	11	4	0	1	0	0	1	0
June	73	60	67	87	22	48	15	77	5.09	1.69	7-8	0	55	6.2	11	ne	48	sw	22	1	7	11	12	13	3	1	0	0	0	0	0
July	79	66	72	92	29	55	3	65	1.77	0.87	2	0	68	5.5	12	ne	42	nw	22	1	9	13	9	8	3	0	0	0	3	0	0
August	81	69	75	93	8	59	31	75	6.20	3.52	14-15	0	72	4.0	11	ne	32	ne	31	0	14	12	5	10	7	0	0	0	2	0	0
September	70	58	64	89	13	47	28	78	3.60	1.41	21-22	0	68	4.9	12	ne	36	w	14	0	10	12	8	8	2	0	0	0	0	0	0
October	57	44	51	76	9	29	13	71	1.20	0.52	20	T.	60	5.2	15	w	46	w	12	2	9	12	10	5	0	1	0	0	0	4	0
November	55	42	48	71	11	28	23	78	3.84	1.31	21-22	T.	47	6.8	17	s	48	w	16	6	4	11	15	12	2	1	0	0	0	6	0
December	28	15	22	55	5	− 7	30	84	4.18	0.95	13-13	19.1	46	6.8	17	w	52	sw	5	2	6	9	16	18	0	3	14	20	0	27	3
Year	56.2	43.2	49.7	93	Aug. 8	−10	Jan. 6	76	43.22	3.52	Aug. 14-15	41.9	52.8	6.1	14	ne	60	w	Apr. 7	34	89	121	155	128	34	11	35	39	5	102	5

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MISCELLANEOUS METEOROLOGIC DATA FOR 1909.

BAROMETRIC PRESSURE; SEA LEVEL.

Mean: 30.02 inches: Highest: 30.63 inches, October 19; Lowest: 29.04 inches, January 29.

TEMPERATURE.

Greatest daily range: 45 degrees to 3 degrees, inclusive, 42 degrees on January 5. Least daily range: 56 degrees to 53 degrees, inclusive, 3 degrees, on September 26.
Greatest monthly range: 75 degrees in January. Least monthly range, 34 degrees in August.
Highest mean of three consecutive days: 80 degrees, August 6 to 8.
Lowest mean of three consecutive days: 7 degrees, December 28 to 30.

PRECIPITATION.

Longest period without precipitation: 17 days, from September 23 to October 9, inclusive.
Longest period with precipitation: 8 days, from November 10 to 17, inclusive.

HAIL.

April 29, August 27.

MISCELLANEOUS DATES.

To June 30,—

Greatest depth of snow on ground, and amount, February 16, 7.4 inches.
Greatest snowfall in 24 hours, and amount: January 29, 5.3 inches.
Last occurrence of zero temperature: January 7.
Last killing frost: May 2.
Last light frost: May 11.
First thunderstorm: January 21.

After June 30,—

Last thunderstorm: November 7.
First light frost: September 2.
First killing frost: October 14.
First occurrence of zero temperature: December 18.
Greatest depth of snow on ground, and amount: December 29-30, 10.0 inches.
Greatest snowfall in 24 hours, and amount: December 24-25, 5.7 inches.

GENERAL SUMMARY.

The year 1909 opened with high temperatures and the first three months were considerably warmer than the average, the excess during January, +5.1 degrees, and February, +7.0 degrees, being pronounced. During the growing season, from April to September, inclusive, fairly normal temperature conditions prevailed, with the exception of August, which was quite warm. The high temperature of November exceeded all previous records for that month, there being an average daily excess of 9.3 degrees. Immediately following this period of great warmth, decidedly cold weather set in, and continued with but slight interruption until the close of the year. In fact, the cold of December, 1909, has been exceeded but three times since the official records began.

The precipitation conditions were in distinct contrast to those of the previous year, when a severe drought prevailed after May to the close of December. The rainfall during the growing season was, as a rule, abundant and quite well distributed in point of time. The snowfall of the early months was nearly normal, but that of December, 19.1 inches, exceeded all former records for that month.

With the exception of May, the first seven months were considerably deficient in sunshine, but there was a slight excess during the remainder of the year. The relative humidity was below normal during January, February, March and July, but was somewhat in excess thruout the other months of the period.

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ANNUAL SUMMARY OF METEOROLOGIC DATA FOR CHICAGO: 1910.

HENRY J. COX, PROFESSOR, U. S. WEATHER BUREAU.

MONTHS	TEMPERATURE (Degrees Fahrenheit)							MOISTURE						SUNSHINE	CLOUDINESS	WIND				NUMBER OF DAYS												
	MEAN			EXTREMES					PRECIPITATION (in. and hundredths)										MAXIMUM (for five min.)								MAX. TEMP.		MIN. TEMP.				
	Maximum	Minimum	Monthly	Maximum	Date	Minimum	Date	Relative Humidity (Percentage)	Total	Maximum in 24 hours	Date	Snowfall (in. and tenths)		Sunshine (Percentage of possible)	Average Cloudiness (Scale, 0-10)	Average Hourly Velocity	Prevailing Direction	Velocity	Direction	Date	Gales (40 miles per hour or over)	Clear	Partly Cloudy	Cloudy	Precipitation (0.01 in. or over)	Thunderstorms	Dense Fog (for one hour or more)	Snow (0.01 in. or more melted snow)	32° Degrees or Below	90° Degrees or Above	32° Degrees or Below	Zero or Below
January	32	20	26	46	26	—5	7	79	3.07	0.71	17-18	14.9		34	7.5	16	w	48	w	26	2	5	6	20	13	0	3	12	15	0	28	2
February	31	18	25	51	15	—6	23	74	0.89	0.52	26	2.8		52	6.6	16	sw	48	w	15	1	6	9	13	6	0	0	6	14	0	27	2
March	57	40	49	81	27	26	15	66	0.29	0.24	19-20	T.		84	3.2	15	sw	50	w	6	3	18	11	2	3	3	0	0	0	0	6	0
April	60	43	51	86	29	26	23	74	3.84	0.97	30	6.9		56	5.4	15	sw	40	nw	22	2	11	6	13	14	4	0	7	0	0	2	0
May	60	47	53	78	22	38	3	74	4.67	1.34	22-23	0		55	5.5	14	ne	50	ne	2	3	8	13	10	13	4	1	0	0	0	0	0
June	75	61	68	91	17	43	3	66	0.91	0.41	2-4	T.		80	3.2	11	n	40	w	18	1	19	8	3	4	2	0	0	0	3	0	0
July	83	69	76	97	24	62	4	67	1.79	0.54	11-12	0		78	4.2	12	sw	42	w	12	1	13	16	2	8	7	0	0	0	6	0	0
August	80	67	73	89	22	53	26	69	3.06	1.81	23	0		68	5.0	12	s	60	ne	23	2	10	15	6	6	3	1	0	0	0	0	0
September	71	60	65	83	8	49	27	78	3.90	1.41	4-5	0		60	5.1	11	sw	35	se	4	0	12	7	11	9	5	2	0	0	0	0	0
October	66	51	59	84	17	27	29	75	1.79	1.10	3-4	T.		71	3.9	11	sw	46	s	3	2	14	12	5	7	1	0	0	0	0	2	0
November	42	30	36	67	9	20	30	75	1.31	0.83	26-27	1.3		45	6.7	13	w	39	w	23	0	5	10	15	12	2	0	3	4	0	21	0
December	32	21	26	43	27	7	12	76	1.32	0.71	28	9.2		42	6.2	15	w	37	s	31	0	8	8	15	11	0	0	10	16	0	30	0
Year	57.4	43.8	50 6	97	July 24	—6	Feb 23	73	26.86	1.81	Aug. 23	35.1		60	5.2	13	sw	60	ne	Aug. 23	17	129	121	115	106	31	7	38	49	9	116	4

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MISCELLANEOUS METEOROLOGIC DATA FOR 1910.

BAROMETRIC PRESSURE; SEA LEVEL.

Mean: 30.03 inches: Highest: 30.76 inches, December 13; Lowest: 29.26 inches, January 26.

TEMPERATURE.

Greatest daily range: 41 degrees to 78 degrees, inclusive, 37 degrees on April 11. Least daily range: 33 degrees to 35 degrees, inclusive, 2 degrees, on January 12.
Greatest monthly range: 60 degrees in April. Least monthly range 34 degrees in September.
Highest mean of three consecutive days: 84 degrees, July 24 to 26.
Lowest mean of three consecutive days: 8 degrees, February 22 to 24.

PRECIPITATION.

Longest period without precipitation: 17 days, from June 19 to July 5, inclusive.
Longest period with precipitation: 6 days, from April 22 to 27, inclusive.

HAIL.

June 2, 18.

MISCELLANEOUS DATES.

Before June 30,—
Greatest depth of snow on ground, and amount, January 14, 11.8 inches.
Greatest snowfall in 24 hours, and amount: January 13, 4.8 inches.
Last occurrence of zero temperature: February 24.
Last killing frost: April 24.
Last light frost: May 27.
First thunderstorm: March 19.

After June 30,—
Last thunderstorm: November 27.
First light frost: October 7.
First killing frost: October 29.
First occurrence of zero temperature: did not occur.
Greatest depth of snow on ground, and amount: December 10, 2.1 inches.
Greatest snowfall in 24 hours, and amount: December 28, 4.0 inches.

GENERAL SUMMARY.

The weather of 1910 was remarkable in many ways. The principal features were as follows:

There was a covering of snow on the ground for a prolonged period, which started early in the previous December and lasted until March 10. While the winter months were consistently cold, there were no great extremes of temperature, but the season was often referred to as an "old fashioned winter" because of the long period of snow on the ground. In strong contrast with these conditions was the month of March after the first decade. In fact, the temperature was so high in that month as to break all previous local records. This heat was, moreover, accompanied by persistent drouth and sunshine. Vegetation was advanced rapidly during the month, on account of the continued heat, and this was followed in April and May by cold weather and severe frosts, which wrought great destruction to the fruit buds, and seriously affected the fruit crop of 1910 in the middle west. During the third decade of April, moreover, there was a considerable fall of snow which broke previous records for the period. While in April and May the precipitation was above the normal, the summer months were unusually dry, with heat considerably above the normal, especially during July. The rainfall was in excess of the average during September, but in the closing months of the year there was a marked deficiency, with temperatures also below the average. As a whole, it may be said that the year was warmer and drier than usual, with greater amount of sunshine. The highest temperature was 97 degrees on July 24, and the lowest, 6 degrees below zero on February 23. The year, moreover, was exceptionally free from destructive wind storms.

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MONTHLY AND ANNUAL MEAN TEMPERATURES, 1871 - 1910

YEAR	January	February	March	April	May	June	July	August	September	October	November	December	ANNUAL
1871	31	32	41	51	58	68	72	72	60	50	34	21	49
1872	23	25	28	47	56	69	72	71	64	50	32	18	46
1873	20	24	32	48	52	68	69	71	63	50	34	32	46
1874	28	30	36	39	58	70	75	73	67	54	40	33	50
1875	16	15	31	43	54	63	69	68	61	48	37	36	45
1876	23	32	34	47	59	68	74	74	62	49	40	19	49
1877	22	27	29	47	57	67	74	72	67	56	40	43	51
1878	32	36	45	52	55	65	75	74	66	53	44	24	52
1879	21	27	41	47	58	64	76	72	61	61	42	31	50
1880	40	35	38	49	65	71	73	73	63	51	32	24	51
1881	19	25	32	42	61	63	73	75	70	56	40	38	50
1882	29	29	40	46	51	64	69	71	65	56	43	27	50
1883	16	23	32	47	53	64	71	68	61	52	42	31	47
1884	19	23	34	44	56	64	69	68	69	56	41	30	48
1885	19	18	31	46	53	65	73	68	64	52	43	32	47
1886	22	29	37	50	57	66	72	73	66	57	38	25	49
1887	16	26	32	49	60	67	75	69	62	47	36	27	47
1888	15	23	30	46	53	67	73	69	60	49	42	32	46
1889	29	30	33	47	57	62	70	71	63	49	39	41	49
1890	31	32	30	46	53	70	72	68	60	51	42	31	49
1891	30	29	31	47	53	66	67	69	69	53	34	36	48
1892	20	32	31	44	53	64	73	71	64	54	35	23	47
1893	12	22	33	44	52	66	74	70	64	53	36	35	46
1894	28	23	41	47	56	71	73	71	66	52	34	32	50
1895	18	17	32	46	59	70	70	72	69	46	36	30	47
1896	27	27	31	53	66	67	72	73	61	50	38	33	50
1897	22	29	35	46	55	65	74	69	70	58	39	25	49
1898	29	28	40	44	56	69	73	71	68	51	37	24	49
1899	23	18	30	50	59	70	72	74	63	58	45	27	49
1900	29	20	29	47	58	64	72	76	66	61	38	30	49
1901	26	17	34	45	54	69	77	72	64	55	38	24	48
1902	25	21	39	46	59	64	72	68	61	55	47	28	49
1903	24	25	40	47	60	61	72	68	64	54	36	20	48
1904	18	17	35	41	57	64	71	68	64	53	43	27	47
1905	18	17	39	46	56	65	71	74	68	53	41	32	48
1906	33	28	30	51	60	68	72	76	70	53	42	33	51
1907	28	26	43	40	52	66	73	71	65	52	41	23	49
1908	29	27	41	49	59	68	74	73	71	55	44	31	52
1909	29	32	36	45	56	67	72	75	64	51	48	32	50
1910	26	25	49	51	53	68	76	73	65	59	36	26	51
Means	24.0	27.5	35.2	46.3	56.5	66.5	72.4	71.4	64.8	53.2	39.3	29.1	48.8

TEMPERATURE EXTREMES

MONTH	Maximum	Year	Day	Minimum	Year	Day	Highest Monthly Mean	Year	Lowest Monthly Mean	Year
January	65	1876b	1	—20	1897‡	25	39.8	1880	12.0	1893
February	63	1880*	26	—21	1899	9	39.0	1902	14.6	1875
March	81	1910	27	—12	1873	4	48.6	1910	28.9	1877
April	88	1899	29	17	1876§	17	53.4	1898	38.8	1874
May	94	1895	31	27	1875	2	65.5	1896	51.4	1882
June	98	1872	19	40	1894t	6	71.4	1894	61.2	1903
July	103	1901	21	50	1873°	19	77.4	1901	67.0	1891
August	98	1874+	11	47	1887	28	76.3	1900	67.6	1880
September	98	1899	5	32	1899	30	70.6	1908	59.8	1888
October	87	1897	15	14	1887	25	61.4	1900	45.2	1895
November	75	1888	1	— 2	1872	29	48.5	1909	31.6	1880j
December	66	1875	31	—23	1872	24	42.4	1877	18.4	1872

* Also in 1876, 10th day. + Also in 1881, 4th day; 1887, 10th day; 1896, 8th day. ‡ Also in 1875, 9th day. § Also in 1881, 1st day; 1879, 3d day. t Also in 1895, 22d day. ° Also in 1895, 9th day. j Also in 1872. b Also in 1909, 23d day.

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MONTHLY AND ANNUAL PRECIPITATION—1871 TO 1910.

YEAR	January	February	March	April	May	June	July	August	September	October	November	December	ANNUAL
1871....	4.13	1.45	2.66	3.70	3.90	5.56	2.52	2.01	0.74	1.88	3.62	3.44	35.61
1872....	0.68	0.84	3.79	3.03	3.24	3.45	3.09	2.59	6.43	0.65	1.06	0.22	29.07
1873....	2.56	0.47	0.89	6.22	7.20	1.44	4.04	1.58	3.53	2.43	1.61	4.44	36.41
1874....	3.47	1.51	2.15	2.67	2.08	3.25	0.58	3.15	3.76	2 55	2.83	0.63	28.63
1875....	0.96	1.99	1.43	2.32	3.64	5.17	7.18	3.29	4.39	4.32	0.75	2.62	38.06
1876....	3.22	3.90	4.04	2.07	1.85	5.96	3.11	3.66	3.74	1.20	3.25	0.48	36.48
1877....	1.91	0.06	5.37	2.42	1.81	6.04	2.98	3.06	2.02	6.51	6.08	2.75	41.01
1878....	1.31	2.12	4.39	5.57	5.22	3.02	6.09	3.66	1.99	5.17	0.83	2.58	41.95
1879....	0.54	1.47	2.37	1.93	3.89	3.18	5.58	0.45	1.18	2.72	4.93	2.47	30.71
1880....	3.53	2.91	2.25	5.20	4.97	3.50	3.07	4.47	2.25	3.19	0.87	1.11	37.32
1881....	0.87	5.98	2.99	1.84	1.85	5.93	4.31	0.54	4.34	6.89	5.97	2.67	44.18
1882....	1.55	2.24	3.43	6.72	5.52	5.71	3.43	4.96	0.91	3.40	1.48	1.99	41.34
1883....	1.74	4.74	0.42	3.72	7.32	5.61	5.53	1.21	1.36	7.36	5.26	1.59	45.86
1884....	1.39	3.27	5.16	3.05	1.53	2.11	3.71	2.50	2.29	3.59	1.80	4.21	34.61
1885....	3.18	2.01	0.57	4.00	3.17	5.20	2.44	11.28	2.97	3.87	2.33	3.35	44.37
1886....	3.56	1.51	1.79	1.29	1.00	0.94	1.53	3.38	6.93	1.42	1.66	1.76	26.77
1887....	3.13	5.10	0.89	0.46	1.38	1.63	1.05	3.35	4.03	2.03	2.41	3.67	29.13
1888....	1.56	1.51	2.99	2.13	6.22	1.66	3.93	2.10	0.98	2.95	2.89	1.94	30.86
1889....	1.64	1.31	1.43	2.35	5.38	2.93	9.56	0.39	2.75	1.82	3.49	1.90	34.95
1890....	2.98	2.47	2.10	3.23	5.13	3.25	2.57	2.58	1.39	4.20	1.59	1.25	32.69
1891....	1.99	1.95	2.13	3.14	2.09	2.42	2.47	4.52	0.32	0.36	3.83	1.32	26.54
1892....	1.99	1.57	2.21	2.17	6.77	10.58	2.23	1.85	1.34	1.54	2.68	1.63	36.56
1893....	2.08	2.44	1.69	4.16	1.93	3.59	3.08	0.18	1.98	1.75	2.45	2.14	27.47
1894....	1.55	2.13	2.66	2.65	3.35	1.96	0.60	0.60	8.28	0.84	1.18	1.66	27.46
1895....	2.15	1.60	1.32	0.86	1.99	1.79	2.42	6.49	0.89	0.51	5.60	6.76	32.38
1896....	1.12	3.48	1.26	2.79	4.16	2.82	3.61	3.52	6.70	1.36	2.16	0.16	33.14
1897....	4.53	2.22	3.56	2.23	0.84	3.60	1.47	1.70	0.84	0.18	3.06	1.62	25.85
1898....	3.54	2.59	4.60	0.76	2.23	5.30	1.94	3.03	3.16	3.26	2.25	1.11	33.77
1899....	0.58	1.60	2.11	0.14	4.35	2.71	6.66	0.91	2.39	2.09	1.14	1.81	26.49
1900....	1.21	3.52	1.58	1.02	3.59	2.06	4.64	4.24	1.56	1.35	3.30	0.58	28.65
1901....	1.15	2.05	3.38	0.33	2.18	2.42	4.25	2.00	2.92	1.29	0.85	1.70	24.52
1902....	0.66	1.53	4.16	2.26	5.08	6.45	5.78	1.44	4.83	1.45	2.03	1.90	37.57
1903....	1.09	3.03	1.67	3.77	0.93	1.62	4.78	3.49	4.00	1.09	0.34	2.28	28.09
1904....	2.25	1.71	4.57	3.01	1.54	0.55	2.76	4.00	2.65	1.58	0.31	1.21	26.14
1905....	1.33	1.95	2.43	3.03	5.14	3.27	5.02	4.46	4.18	1.82	2.05	0.68	35.36
1906....	1.67	2.37	1.61	1.86	2.09	1.87	4.84	1.43	5.54	2.05	3.08	2.46	30.87
1907....	4.21	1.00	2.94	2.37	3.50	3.64	3.15	4.22	4.49	0.93	1.92	2.73	35.10
1908....	2.05	3.72	3.48	2.81	6.74	1.48	1.45	6.35	2.09	0.81	2.67	1.18	34.83
1909....	1.96	3.84	1.63	7.73	2.18	5.09	1.77	6.20	3.60	1.20	3.84	4.18	43.22
1910....	3.07	0.89	0.20	3.84	4.67	0.91	1.79	3.08	3.90	1.79	1.31	1.32	26.86
Means.	2.10	2.30	2.51	2.87	3.54	3.49	3.53	3.10	3.09	2.38	2.52	2.09	33.52

EXTREMES OF WIND AND PRECIPITATION.

MONTH.	PRECIPITATION.						WIND.			
	24 hour max.	Year	Day	Greatest mo.	Year	Least mo.	Year	Max. vel.	Dir.	Year	Day
January	1.80	1907	18-19	4.53	1897	0.54	1879	66	ne.	1898	22
February	1.94	1876*	8-9	5.98	1881	0.06	1877	84	ne.	1894	12
March	3.26	1884	25-26	5.37	1877	0.29	1910	68	ne.	1890	27
April	2.75	1909	29	7.73	1909	0.14	1899	72	ne.	1893	20
May	2.82	1873	1-2	7.32	1883	0.84	1897	72	sw.	1903	25
June	3.44	1885	2-3	10.58	1892	0.55	1904	72	nw.	1892	13
July	4.14	1878	25-26	9.56	1889	0.58	1874	72	w.	1897	5
August	6.19	1885	2-3	11.28	1885	0.18	1893	72	sw.	1898	16
September	3 44	1875	9	8.28	1894	0.32	1891	72	sw.	1900	11
October	2 55	1877	19-20	7.36	1883	0.18	1897	63	se.	1898	17
November	3.39	1883	5-6	6.08	1877	0.31	1904	76	s.	1898	7
December	2.66	1895	18-19	6.76	1895	0.16	1896	72	sw.	1904	27

*Also in 1883, 16th day.

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STATION BAROMETRIC PRESSURE.

At Chicago—Elevation, 823 feet. By Months—1907 to 1910, inclusive.

	1907	1908	1909	1910
January	29.266	29.111	29.231	29.173
February	29.215	29.153	29.016	29.236
March	29.140	29.138	29.084	29.168
April	29.093	29.045	29.059	29.009
May	29.104	28.993	29.039	29.139
June	29.047	29.148	29.122	29.128
July	29.064	29.180	29.108	29.068
August	29.148	29.151	29.168	29.131
September	29.115	29.196	29.230	29.194
October	29.221	29.228	29.187	29.128
November	29.174	29.126	29.218	29.105
December	29.096	29.147	29.089	29.196

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FINANCIAL STATEMENTS

EXPENDITURES FOR OPERATION AND MAINTENANCE
OF THE

DEPARTMENT OF HEALTH

CHICAGO

FOR THE YEARS 1907, 1908, 1909, 1910

AND A SUMMARY STATEMENT OF REVENUE DERIVED FROM
LICENSES, FINES, ETC., AND PER CAPITA COST
FOR HEALTH SERVICE

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FINANCIAL STATEMENT.

Expenditures for Operation and Maintenance for the Calendar Year 1907.

1907	January	February	March	April	May	June	July	August	September	October	November	December	Totals 1907
Commissioner's office—salaries	$ 1,106.25	$ 1,106.25	$ 1,129.22	$ 3,195.51	$ 1,595.57	$ 1,794.88	$ 1,745.58	$ 1,768.16	$ 1,816.55	$ 1,816.55	$ 1,816.55	$ 1,816.55	$ 20,707.62
Bureau of Contagious Diseases—													
salaries	3,936.96	2,968.75	38,596.61	26,676.95	11,330.57	10,962.85	5,109.17	4,984.92	9,254.72	9,869.27	9,921 46	9,934.75	143,545.98
expense	1,546.61	4,167.46	.....	6,546.64	3,006.24	794.76	3,252.12	348.75	1,509.98	1,549.03	308.17	7,170.46	30.200.22
emergency	2,002.82	110.87	9,438.85	5,247 46	.....	.....	.....	.....	.....	.....	.....	.....	16,800.00
Ambulance Service—salaries	420.77	335.49	2,693.92	3,724 00	2,404.01	2,096.65	2,116.54	2,116.64	2,116.65	2,116.65	2,116.65	2,152.29	24,410.26
repairs and renewals	.....	95.27	.....	3,521.75	180.83	87.83	6,923.79	106 81	35.10	33 88	533.41	134.16	11.652.83
live stock and replacement	.....	.....	415.80	.....	3,505.67	1,910.00	.....	1,300.00	.....	.....	225.00	.....	7.356.47
live stock, keep	.....	292 34	10.00	1,564.69	615.14	365.80	549 96	508.04	1,197.36	495.39	937.80	1,081.45	7,617.47
Bureau of Vital Statistics—salaries	868.75	618.75	1,118.75	2,520.71	1,518.79	1,548.31	1,652.93	1,616.64	1,616 64	1,541.37	1,538.86	1,502.84	17,663.34
Bureau of Sanitation—salaries	3,241.56	3,385.50	3,441.75	9,356.76	5,600 49	5,899.91	5,899.91	5,894.88	5,819.07	6,319.21	6,634.01	6,690.23	68,183.28
Night-soil plant—salaries	206.25	.....	412.50	575.83	535.35	75.00	.....	.....	.....	.....	.....	.....	1,804.93
operation	.....	.....	.....	.....	.....	.....	964.00	.....	.....	.....	82.35	31.00	1,077.35
rent	125.00	125.00	250.00	.....	250.00	.....	125.00	250.00	125.00	125 00	.....	125.00	1,500.00
Free Public Baths—salaries	2,050.00	2,050.00	2,050.00	5,794.89	3,020.16	3,000.00	3,023.22	2,928.06	3,054.98	3,045.00	3,120.00	2,933.72	36,070.03
repairs	.....	647.81	.....	1,175.72	1,197.19	329.96	816.49	275.66	440.36	365.91	388.75	380.95	6,018 80
other operation	7.35	232.44	20.25	1,714.03	1,216.82	905.06	747.71	1,686.95	852.04	828.93	1,042.98	1,747.77	11,002.33
Municipal Lodging House—salaries	153.00	153.00	306.00	251.66	394.64	251.66	251.66	251.66	251.66	251.66	251.66	251.66	3,019.92
repairs and renewals	.....	8.20	6.06	278.34	258.48	119.51	266.98	65.41	59.48	.....	.....	.....	1,062.45
subsistence	9.00	.....	42.88	95.03	49.70	.....	.....	18.85	.....	6.55	.....	.....	222.01
other expense	24.29	377.49	59.17	121.03	243.06	164.98	70.74	303.81	14.00	8.25	.....	.....	1,386 82
Board of Examiners of Plumbers—salaries	281.25	281.25	281.25	656.25	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	4,500.00
Bureau of Food Inspection—salaries	2,997.19	2,937.05	2,787.50	7,614.15	4,743.20	4,093.70	4,196 85	4,320.26	4,599.81	4,328.90	4,154.90	4,336.71	51,110.22
Laboratory—salaries	969.80	1,071.25	1,127.50	4,031.17	2,051.00	2,124.15	2,140.51	2,140.03	2,142.93	2,021.65	2,021.65	1,921.97	23,763.61
drugs and appliances	.....	502.75	.....	440.13	187.30	200.40	125.04	202.74	259.24	189.25	138.90	247.84	2,493.59
power and steam	.....	.....	.....	.....	.....	.....	.....	.....	500.00	.....	.....	75.00	575.00
repairs and renewals	.....	568.17	.....	892.59	78.65	15.03	51.32	65.05	92.57	3.22	42.76	44.59	1,753.81
rent	375.00	375.00	750.00	.....	750.00	.....	375.00	750.00	416.66	437.49	.....	416.66	4,645.81
expense, miscellaneous	.....	38.91	495.00	673.09	383.56	10.04	81.90	35.25	105.81	115.35	68.88	289.37	2,297.16
Miscellaneous:													
Stationery and printing	.....	509.72	.....	4,458.57	749.63	773.50	1,437.74	374.20	644.15	1,563.82	4,374.83	1,848.79	16 734.95
Street car transportation	.....	9.50	.....	829.26	428.00	501.25	436.45	.....	918.05	421.40	462.85	1,476.91	5,483.67
Repairs, miscellaneous	.....	585 64	.....	2,426.98	402.03	30.38	9.50	286 16	73.33	196.77	58.62	47.11	4,216.52
Operation, miscellaneous	424.98	1,535.71	263.67	2,008.96	2,019.29	396.48	497.65	595.69	2,125.90	1,059.31	1,066.55	2,436.77	14,430.96
Totals	$21,611.83	$26,500.10	$66,698.01	$99,692.97	$51,689.72	$40,706.21	$45,873.42	$34,610.01	$41,413.54	$39,820.45	$42,771.65	$51,470.95	$562,856.86

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FINANCIAL STATEMENT.

Expenditures for Operation and Maintenance for the Calendar Year 1908.

1908	January	February	March	April	May	June	July	August	September	October	November	December	Totals 1908
Commissioner's office salaries	$ 1,100.00	$ 1,175.00	$ 2,924.91	$ 1,758.30	$ 1,758.30	$ 1,758.30	$ 1,758.30	$ 1,782.49	$ 1,833.30	$ 1,833.30	$ 1,833.30	$ 1,833.30	$ 21,348.80
Bureau of Contagious Diseases—													
salaries	6,858.98	7,077.25	14,180.76	9,118.08	9,160.71	8,937.54	4,385.92	3,896.41	7,237.12	8,763.93	8,737.16	10,832.92	99,186.88
expense	1,677.23	1,630.20	1,563.25	1,184.88	1,777.94	2 279 83	884.50	700.91	541.38	1,228.62	2,211.57	5,098.01	20,778.42
special medical inspection	.....	.....	.....	.....	.....	.....	1,346.44	3,982.18	2,611.42	1,354.42	.....	.....	.....
Isolation Hospital—salaries	700.48	756.13	1,429.81	983.31	983.31	983.31	833.31	899.97	917.97	919.97	952.80	1,705.57	12,067.94
expense	46.48	568.60	453.43	298.94	434.00	155.02	185.28	98.47	138.19	125.72	813.38	927.82	4,247.33
repairs	209.09	115.89	184.55	137.34	.....	3.53	28.20	151.65	14.70	159.03	101.10	641.04	1,746.12
Bureau of Hospital and Ambulance Service salaries	1,910.66	1,790.28	3,604.60	2,399.98	2,399.98	2,399.98	2,399.98	2,351.59	2,316.64	2,316.64	2,149.99	2,183.84	28,224.16
repairs and renewals	12.69	47.77	32.75	97.10	33.42	33.90	79.89	82.90	61.77	102.93	3,237.53	1,026.16	4,848.71
live stock, keep	10.00	255.99	627.17	288.89	685.16	241.69	425.04	391.70	220.83	589.01	222.79	991.85	4,950.12
emergency hospital	.....	.....	.....	.....	596.32	309.86	290.51	162.74	415.56	190.06	2,399.14	2,425.90	6,790.09
Bureau of Vital Statistics salaries	1,484.27	1,508.34	3,046.02	1,834.80	1,818.35	2,016.46	1,966.46	1,899.56	1,841.46	1,841.46	1,814.23	1,880.64	22,952.05
Bureau of Sanitation salaries	5,661.89	5,712.50	11,515.12	8,321.88	8,691.43	8,694.15	8,631.78	8,421.57	8,561.58	8,586 93	8,548.88	8,733.43	100,081.14
Night soil plant, rent	125.00	125.00	125.00	125.00	125.00	.....	.....	.....	.....	.....	.....	.....	625.00
Free Public Baths salaries	2,901.55	2,220.18	4,705.84	3,213.33	3,157.72	3,262.16	3,373.06	3,281.60	3,235.00	3,270.81	3,366.66	3,390.00	38,777.91
repairs	13.01	124.04	22.19	93.56	67.61	401.75	288.02	434.98	225 84	112.48	147.48	217.65	2,148.61
rebuilding	.....	.....	.....	.....	30.66	1,870 00	680.00	2,125.00	1,020.00	.....	1,600.00	2,686.35	10,012.01
other expense	170.19	675.15	1,295.05	1,186.81	996.73	771.74	910.43	411.79	982.65	1,135.65	2,667.74	1,976.16	13,180.09
Municipal Lodging House- salaries	188 75	188.75	377.48	211.66	254.16	251.66	251.66	251.66	251.66	251.66	251.66	251.66	2,982.42
repairs and renewals	599.65	188.54	552.60	85.20	.....	.....	.....	21.38	36.64	44.74	20.20	50.34	1,599.29
subsistence	80.61	710.91	736.04	616.86	303.56	46.87	293.13	139.48	112.08	108.21	113.66	405.27	3,666.68
other expense	74.72	314.05	419.98	484.70	130.19	151.30	.....	189.05	96,96	80.81	337.54	355.28	2,634.58
Board of Examiners of Plumbers—salaries	281.25	281.25	562.50	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	4,500.00
Bureau of Food Inspection—salaries	2,781.24	2,781.25	5,404.91	3,485.62	3,851.97	4,124.49	4,175.56	4,515.82	4,428.65	4,378.40	4,539.49	4,242.75	48,710.15
Laboratory—salaries	1,786.67	1,669.44	3,518.47	2,288.32	2,332.18	2,206.65	2,149.12	1,876.07	1,916.94	1,808.32	1,778.32	1,733.32	25,093.82
drugs and appliances	12.50	208.06	44.85	157.52	245.87	75.47	83.54	265.39	119.38	326.94	174.42	663.57	2,477.51
power and steam	.....	50.00	25.00	.....	25.00	25.00	.....	.....	.....	.....	.....	175.00	300.00
repairs and renewals	100.96	53.41	49.57	9.50	25.78	76.11	.....	5.13	2.25	31.41	.....	89.73	443.85
rent	416.66	416.66	416.66	416.66	416.66	416.66	416.66	416.66	416.66	416.66	416.66	416.66	4,999.92
expense, miscellaneous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Michigan Water Commission	.....	.....	.....	.....	.....	.....	.....	39.85	25.00	63.99	38.60	50.00	217.44
Miscellaneous:													
Stationery and printing	312.20	594.89	652.79	610.55	865.25	914.15	1,217.05	575.73	597.79	2,263.10	848.19	2,019.84	11,461.53
Street car transportation	.....	434.42	295.15	370.86	.....	.....	10.00	37.10	.....	10.00	.....	336.55	1,494.67
Repairs, miscellaneous	12.44	87.05	257.97	.....	141.35	52.00	1,624.71	7.04	73.78	146.25	229.15	237.72	2,839.46
Operation, miscellaneous	568.74	727.48	1,013.34	835.81	752.65	928.19	1 448.47	1,117.12	756.58	1,416.42	801.30	1,901.89	12,237.99
Totals	$29,694 83	$32,772.43	$70,197.24	$41,152.78	$42,551.41	$43,964.69	$40,624.89	$41,062.26	$41,576.16	$44,445.73	$50,876.60	$50,481.11	$529,400.13

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FINANCIAL STATEMENT.

Expenditures for Operation and Maintenance for the Calendar Year 1909.

1909	January	February	March	April	May	June	July	August	September	October	November	December	Totals 1909
Commissioner's office—salaries	$ 1,375.00	$ 1,388.39	$ 2,650.86	$ 1,765.32	$ 1,779.99	$ 1,779.99	$ 1,789.99	$ 1,789.99	$ 1,789.99	$ 1,789.99	$ 715.99	$ 2,663.99	$ 21,279 49
Bureau of Contagious Diseases—salaries	9,103.45	9,320.61	18,581.67	12,638.09	12,728.86	12,835.98	6,210.04	6,134.77	11,759.76	12,989.92	9,228.99	16,706.09	138,238.23
expense	1,018.56	1,892.49	805.90	2,892.21	1,165.25	1,395.29	843.42	1,116.30	842.14	1,470.80	2,011.59	1,830.41	17,284.36
Isolation and Emergency Hospitals—salaries	1,553 16	1,702.28	3,344.03	2,341.13	2,081.27	2,266.29	1,964.96	1,409.20	1,433.14	2,380.22	2,019.07	2,242.81	24,737.56
expense, operation	139.61	806.01	1,897.04	1,300.02	1,118.08	2,119.54	618.88	848.16	1,832.34	1,677.23	992.72	4,546.76	17,896.39
repairs	539.37	744.02	1,449.15	234.17	60.69	194.77	59.00	102.87	791.89	826.69	117.96	231.41	5,346.37
equipment repairs	107.32	115.29	49.49	56.53	123.43	83.61	85.40	30.91	16.87	62.94	52.73	165.32	950.84
Infant Welfare Campaign	.....	.....	.....	.....	.....	.....	.....	2,592.31	967.60	574.48	95.01	193.41	4,422.81
Bureau of Hospital and Ambulance Service—salaries	1,623.25	1,563.40	3,332.41	2,203.33	2,203.33	2,203.33	2,203.33	2,203.33	2,149.99	2,225.89	921.33	3,685.33	26,518.23
expense	48.00	122.53	59.34	667.85	93.23	118.16	676.35	105.58	375.35	310.27	405.38	1,358.96	4,341.02
live stock, keep	.....	45.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bureau of Vital Statistics—salaries	1,456.05	1,456.05	2,659 87	1,703.33	1,703.33	1,736.66	1,803.33	1,803.33	1,803.33	1,803.33	721.33	2,886.62	21,536.56
Bureau of Sanitation—salaries	6,409.00	6,411.93	12,663.34	8,607.11	8,545.70	8,424.61	8,537.65	8,499.91	8,426.50	8,198.51	3,208.78	12,979.76	100,810.80
Free Public Baths—salaries	2,586.05	2,593.39	5,044.14	3,249.15	3,415.48	3,487.50	3,552.90	3,637.57	3,565.00	3,562.58	1,473.50	5,419.66	41,586.92
repairs	269.52	201.86	78.62	84.84	97.43	811.09	626.37	285.13	96.63	34.47	20.14	616.59	3,222.69
expense, operation	81.10	535.31	1,817.16	449.83	502.79	1,672 69	144.87	646.07	3,043.68	1,137.86	146.88	3,420.62	13,598.62
Municipal Lodging House—salaries	188.75	188.75	377.48	251.66	251.66	251.66	251.66	187.69	135.00	187.69	292.23	211.07	2,775.30
repairs and renewals	.....	.....	.....	41.60	28.06	.....	33.78	12.93	40.21	51.59	.....	7.75	215.94
subsistence	83.86	251.67	449.72	820.29	67.68	298.79	192.44	.....	97.00	68.14	22.30	155.42	2,507 33
other expense	76.47	110.98	54.18	165.39	116.76	89.06	128.66	33.88	118.33	116.60	37.96	233.97	1,282 24
Board of Examiners of Plumbers—salaries	281.25	281.25	62.49	.....	.....	.....	.....	.....	.....	.....	.....	291.09	916.08
Bureau of Food Inspection—salaries	3,291.07	3,291.07	6,610.98	4,402.91	4,364.74	4,364.02	4,294.52	4,459.35	4,377.91	4,319.58	1,668.84	6,849.57	52,314.56
Laboratory—salaries	1,325.40	1,356.25	2,938.10	1,740.48	1,705.74	1,628.32	1,628.32	1,627.99	1,553.49	1,519 28	615.48	2,732.31	20,371.16
drugs and appliances	65.14	408.29	284.14	464.80	142.70	357.13	605.64	804.71	263.83	395.58	147.33	767.66	4,706.95
repairs and renewals	24.15	6.58	1.05	7.85	1.68	.....	15.80	.40	22.65	91.83	99.67	.65	272.31
power and steam	.....	.....	.....	.....	.....	.....	150.00	25.00	.....	.....	.....	45.00	220.00
other expense	74.22	164.94	74.71	109.79	86.01	258.67	111.89	113.58	417.19	179.34	230.72	855.89	2,676.95
Lake Michigan Water Commission	.....	32.83	.....	.....	.....	.....	.....	.....	20.00	.....	.....	264.93	317.76
Miscellaneous:													
Stationery and printing	228.98	1,065.46	1,249.43	1,269.20	591.73	995.15	438.56	1,007.39	1,046.42	1,557.24	531.96	1,314.50	11,296.02
Street car transportation	.....	174.90	199.59	17.80	235.00	227.90	249.10	.....	371.00	212.50	.....	504.20	2,191.99
Rent	416.66	416.66	416.66	416.66	416.66	416 66	416.66	416.66	583.33	250.00	250.00	250.00	4,666.61
Repairs and other expense	29.94	8.50	21.98	44.11	26.19	47.50	58.36	56.89	8.73	401.61	148.32	736.19	1,588.30
Other expense of operation	996.55	837.66	624.28	966.86	1,464.82	1,014.49	1,178.93	1,010.33	1,126.68	1,286.51	1,679.20	1,779.75	13,966.06
Totals	$33,392.24	$37,494.85	$67,803.97	$49,686.37	$45,171.29	$49,359.04	$38,943.24	$41,136.42	$49,189.64	$50,440.94	$28,222.21	$76,473.63	$567,313.84

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FINANCIAL STATEMENT.

Expenditures for Operation and Maintenance for the Calendar Year 1910.

1910	January	February	March	April	May	June	July	August	September	October	November	December	Totals 1910
Commissioner's office—salaries	$ 576.99	$ 1,466.66	$ 1,612.49	$ 1,789.99	$ 1,733.99	$ 1,744.16	$ 1,672.48	$ 1,654.99	$ 1,654 99	$ 1,636.99	$ 1,638.21	$ 2,693.51	$ 19,875.45
Bureau of Contagious Diseases—salaries	8,028.00	9,697.55	9,761.17	3,125 15	9,685.38	9,691.26	9,671.95	5,381.07	5.539.25	9,608.10	16,844.77	14,860.85	111,894.50
Supervising nurse—salary	30.00	75.00	75.00	75.00	75.00	120.00	.....	.....	29.03	75.00	75.00	120.97	750.00
Nurses—salaries	949.92	2,324.65	2,256.40	2,374.81	2,350.00	3,740.32	.....	.....	474.27	2,380.00	2,392.27	3,883 06	23,125 70
Smallpox hospital—salaries	227.31	568.31	568.31	568 31	568.31	568.31	568.31	568.29	551.10	568.31	568.31	916.61	6,809.79
Diphtheria hospital—salaries	1,662.62	1,362,84	1,348.52	700.33	2,866.07	.....	1,488.37	1,117.89	1,115.13	1,156.80	1,414.36	2,856.01	17,088.94
Infant Welfare Campaign	.....	.....	.....	.....	.....	.....	.....	1,123.02	1,525.39	1,747.12	868.00	654.81	5,918.34
Bureau of Hospital and Ambulance Service—salaries	921.33	2,303,31	2,346 55	2,260.09	2,303.33	1,558.26	.....	.....	.....	.....	.....	.....	11,692.87
Bureau of Vital Statistics—salaries	608.46	1,057.73	1,089.98	1,098.91	1,157.31	1,173.31	1,173.31	1,173 31	1,173.31	1,137.20	1,173.31	1,892.41	13,908.55
Bureau of Sanitation—salaries	3,298.22	8,462.89	8,392.93	8,261.60	8,223.84	8,342.60	8,538 36	8,286.74	8,587.36	8,228.07	8,763.67	14,218.60	102,005.28
Free Public Baths—salaries	1,393.57	3.212.34	3,236.39	3,476.11	3,484.66	3,529.51	3,465.82	3,456.91	3,459.84	3,518.98	3,572.89	5,472.78	41,279.80
Municipal Lodging House—salaries	292.25	251.66	251.66	.....	503.32	.....	310.38	251 66	251.66	251.66	251.66	394.41	3,010.32
Board of Examining Plumbers—salaries	48.66	237.26	205.00	688.92	455.00	455.00	595.00	738.87	529.20	903.38	685.00	925.15	6,466.44
Bureau of Food Inspection—salaries	1,727.58	4,450 47	4,337.68	4,306 33	4,199.83	4,236.22	4,261.17	4,361 00	4,440.04	4,353.45	4,267.74	7,088.53	52,030.04
Laboratory—salaries	595.89	1,300.68	1,411.65	1,341.97	1,496.20	1,380.03	1,454.98	1,550.20	1,467.62	1,588.97	1,530.83	3,789.57	18,908.59
overtime (milk chemist)	33.50	33.50	33.50	.....	33.50	33.50	33.50	33.50	33.50	33.50	67.00	31.50	400.00
Miscellaneous:													
Overtime	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,499.91	1,499.91
General supplies	500.99	430.01	2,536.80	2,024.21	6,832.83	2,042.51	4,209.61	2,648.94	2,073.95	4,830.99	3,906.28	3,184.95	35,222.07
" " Infant Welfare Work	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.05	.....	.....	2 05
Repairs and replacements	37.90	38.85	725.77	646.70	586.99	761.33	934.38	202.97	366.07	328.07	109.02	1,723.90	6,461.95
Apparatus, machinery, vehicles, etc	.....	.....	.....	.....	.....	.....	.....	1,425.00	.....	.....	.....	.....	1,425.00
Furniture and fixtures	.....	.....	.....	.....	.....	8.62	17.75	.....	.....	2.20	.....	392.05	420.62
Printing and stationery	161.83	6.22	1,466.97	457.42	846.19	1,040.52	907.20	1,097.79	1,102 63	882.66	658.15	2,313.84	10,941.42
Street car transportation	.....	.60	288.85	1.45	889.75	.....	609.34	.....	92.75	549.30	323 50	631.85	3,387 39
Rent	270.00	270.00	270.00	270.00	420.00	420.00	820.00	414.20	400.00	400 00	400.00	180.00	4,534.20
Fuel and power	.....	.....	1,930.02	824.29	1,272.36	806.70	484 85	1,939.08	2,966.49	33.50	613.82	1,477 76	12,348.87
Forage, shoeing, boarding of horses	.....	.....	318 60	290.53	158.49	26.83	18.00	24.25	70.40	41.55	31.88	35.50	1,016.03
All other operations	1,348.31	756.93	2,586.67	969.52	2,754.80	1,902.20	2,268.55	1,362.04	1,607.57	1,409.12	1,806.96	3,131.61	21,904.28
Totals	$22,713.33	$38,307.46	$47,050.91	$35,551.64	$52,897.15	$43,581.19	$43,503.31	$38,811.72	$39,511.95	$46,066.97	$51,962.63	$74,370.14	$534,328.40

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SUMMARY FINANCIAL STATEMENT, 1907-1910.

Expenditures for Health Purposes and Revenue Created Under the Health Ordinances.

EXPENDITURES	1907	1908	1909	1910
Totals on all accounts	$562,856.26	$529,400.13	$567,313.84	$534,328.40
Revenue created—Total	217,385.77	237,242.12	200,724.53	265,338.53
LICENSES:				
Bakers	5,356.80	4,992.00	4,948.80	5,769.60
Bathing Beaches	129.60	86 40	48.00	100.00
Butchers	49,723.20	50,356.80	35,073.60	54,681.60
Bottlers (carbonated waters)	.....	.....	1,368.01	2,846.40
Delicatessens	9,571.20	10,214.40	4,360.07	6,700.80
Fishmongers	1,828.80	1,310.40	931.20	1,526.40
Fish Peddlers	374.40	316.80	192.00	216.00
Hospitals	6,144.00	4,216.00	2,624.13	3,568.01
Ice Dealers	7,660.80	8,289.60	7,401.60	8,640 00
Medical Dispensaries	.....	19.20	73.63	134.40
Milk Dealers	23,260.80	19,012.80	15,072.86	21,427.20
Milk Peddlers	26,131.20	25,082.00	17,093.25	25,526.40
Nurseries	.....	.....	12.81	28.80
Poulterers	345.60	345.60	259.20	460.80
Rendering Tanks	5,260.80	5,184.00	3,611.40	5,548.80
Restaurants	23,241.60	25,617.60	26,878.78	28,656.00
Scavengers—Offal	1,056.00	960.00	640.05	1,056.00
" —Night	432.00	240.00	96.02	144.00
" —Private	700.80	758.40	492.15	782.40
Slaughtering and Rendering	10,656.00	10,476.00	7,104.00	11,520.00
Soap Factories	1,584.00	1,296.00	1,056.00	2,016.00
Tanneries	1,152.00	1,152.00	800.14	1,248.00
Undertakers	4,084.80	4,070.40	2,668.53	4,094.40
Workshops	4,955.52	7,330.56	5,994.24	7,703 04
OTHER FEES AND RECEIPTS:				
Inspection	30,100.75	38,119.39	42,424.50	42,136 45
Antitoxin	.....	18.00	.....	.....
Miscellaneous	2,645.60	4,364.77	11,394.31	18,385.50
FINES:				
Suits brought by food bureau	989.50	10,088.00	7,200.25	6,246.00
Suits brought by sanitary bureau	.....	3,386.00	905.00	1,175.00
PER CAPITA COST FOR HEALTH CONSERVATION:				
Net (after deducting receipts from expenditures)	16.9c	13.9c	17.1c	12.3c
Gross (not deducting receipts from expenditures)	27.5c	25.2c	26.4c	24.3c

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DEPARTMENTAL RULES

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DEPARTMENTAL RULES.

1. *Office Hours*: The regular hours of service in the Department of Health are from 9 a. m. until 5 p. m., and on Saturdays from 9 a. m. to 12 m., unless the character of the service is such as to require other arrangements, in which case a total of seven hours shall be considered a full working day. Sunday and holiday service shall be required when such service is necessary to the proper conservation of public health. An equal amount of time off for Sunday and holiday work may be given at the discretion of the head of the bureau. Any employe may be called upon, however, by his superior officer at any time for any necessary special duty, and when so called upon shall perform such duty without regard to the regular hours.

2. *Punctuality*: Unless otherwise directed, employes shall report to their respective bureaus as assigned at 8:55 a. m., and begin work at 9 o'clock. They must begin work punctually at the expiration of the luncheon hour. Two reports of tardiness within any calendar month, not satisfactorily explained, will be sufficient grounds for disciplinary action.

3. *Luncheon*: Time not to exceed one hour will be allowed to each employe for luncheon. This time must be taken at such time as does not, in the opinion of the head of the bureau, interfere with the business of the Department. At least one employe shall remain in charge of each division of work in the office during the lunch hours.

4. *Time Sheet*: A record of the time of each employe shall be entered by him daily upon the official time record sheets of the bureau. Entries upon this sheet shall be made accurately to the nearest five minutes at the time of beginning and ending of work. Failure to accurately keep such record for one day or more, unless by consent of the head of the bureau, shall be sufficient cause for disciplinary action. Overtime, if any, shall be totaled at the end of the month at the bottom of the time record.

5. *Vacations*: A vacation shall be granted only upon written application addressed to the head of the bureau or in accordance with a prearranged schedule approved by him. Food inspectors and the bath attendants shall not be granted vacations in July, August and September. Disinfectors shall be granted vacations only in June, July, August and September. Vacations are to be granted with the understanding that the employe on vacation is subject to call at any time emergency demands.

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6. *Sick Leave; Reporting*: All employes in the Department shall report sickness to their superior officer before 10 a. m. of each day on which sick leave is to be granted. These reports must be turned in to the head of the bureau for action, and shall then, if approved, be entered on the time book as a sick leave. Such temporary leaves of absence, obtained on account of sickness, by reporting before 10 o'clock in the morning, shall not extend over a period of three days.

7. *Leave of Absence*: Leave of absence, other than sick leave, shall not be granted unless it can be shown that it is best for the convenience and interest of the Department. Leave of absence shall be granted only upon written application addressed to the head of the bureau and when approved by him.

8. *Changes in Residence*: Notice in writing of all changes in residence and telephone must be sent to the assistant secretary immediately upon occurrence.

9. *Smoking*: Smoking in the Department offices is prohibited.

10. *Loitering Around Department*: Loitering or gossiping in the offices, laboratories, hallways or toilet rooms during working hours is forbidden. Field employes are required when leaving the office, after reporting in accordance with orders, to go directly to their work, without loitering at any point or deflecting from the most direct routes from the office to their districts.

11. *Private Interests*: While in the service of the Department no employe shall make use of or apply any portion of the time he may be required to devote to the service of the city otherwise than to the performance of his official duties; nor shall he use any authority or power with which he may be vested as such employe for any purpose other than the performance of his public duties; nor shall he connect himself in any way with any occupation, industry, firm or corporation which it is his duty to inspect or pass upon, or which is controlled or passed upon by the Department through the agency of his inspection or report of tests; except this clause of the rule shall not prohibit the rendering of professional services by any physician employed in the Department.

12. *Responsibilities of Bureau Heads and Others*: No bureau head shall under[illegible] promulgate or put into operation any work of a charact[illegible] the policy already established, without the [illegible] the head of the Department; also no [illegible]vision, supervisor or other subordinate [illegible] or put into operation any work of a [illegible] to the policy already established without [illegible]nt of the head of the bureau.

Services: No employe of this Department shall [illegible] write letters indorsing or recommending

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any commercial article, using his official title or the name of the Department, except on written permission of the Commissioner of Health.

14. *Responsibility for Official Records*: Each employe will be held responsible for the safekeeping of all books and records placed in his care. Each employe shall upon request return all official records and equipment to the Department. No records shall be destroyed without permission from the Assistant Commissioner.

15. *Official Uniforms*: Inspectors must at all times when on duty, unless otherwise permitted by their respective chiefs, wear the full prescribed uniform and star of the Department. Inspectors are required to present a neat appearance and to keep their uniforms and equipment in good condition and repair. Employes other than field workers may wear the Department uniform, if they so desire.

16. *Loaning Official Badge*: No employe shall loan his official badge to any person except by expressed permission of the chief of bureau.

17. *Buying of Department Supplies*: All supplies, labor, etc., of every nature costing the Department money, shall be purchased through the Department's duly authorized agents.

18. *Vaccination*: Each employe in the Department of Health must upon entering the service present to the chief of the bureau in which he is employed a certificate of vaccination, which must meet the approval of the Commissioner of Health or chief of bureau of contagious diseases.

19. *Penalty*: Recommendation in respect to a penalty for any infraction of these rules may be made to the Commissioner of Health by the bureau chiefs, singly or in conference, and he shall impose such fine, suspension from duty, demerit mark or reprimand as the character of the offense and the circumstances of the case may in his judgment, warrant.

20. *Bureau Rules*: The chiefs of bureaus shall make rules applying to the actions and conduct of employes in their respective bureaus. Such rules must be set forth in writing and shall in no way conflict with the rules and regulations of the Department.

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